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ANNUAL REPORT

OF THE

ISTHMIAN CANAL COMMISSION

FOR THE

YEAR ENDING DECEMBER 1, 1906.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1906.

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ANNUAL REPORT
OF THE
ISTHMIAN CANAL COMMISSION
FOR THE
YEAR ENDING DECEMBER 1, 1906.

WASHINGTON, D. C., *December 6, 1906.*

SIR: The Isthmian Canal Commission has the honor to submit its annual report for the year ending December 1, 1906.

THE REPORT.

During the year the first stage of canal work, that of preparation, has virtually been past, and the Commission finds itself in position to enter upon the second stage, that of actual construction of a lock canal at an elevation of 85 feet, authorized by Congress in June last.

Of these two stages the first was at once the more difficult and the more important. If not done thoroly and intelligently in every part the actual work of construction would be handicapped from the start. It was necessary, as in the launching of any great enterprise, to create an organization with which to work. It was necessary also to make the Isthmus, by thoro sanitation, a healthful place in which to work; to provide suitable quarters and food for employees; to construct proper terminal yards and railway tracks and intermediate yards for the handling of the vast quantities of materials and supplies; to install a system of railway tracks thru the cuts; to put the various levels in the cut in proper condition for the installation and operation of the maximum number of steam shovels; to purchase and assemble the plant for constructing the canal; to work out all engineering problems; to perfect a government and create a system of accounts, and to formulate a preliminary plan for carrying forward the work in each department.

Emphatic testimony to the thoroness with which the preliminary work has been done was borne by the Senate Committee on Inter-oceanic Canals in its majority report, made to the Senate on May 17, 1906, after an investigation which extended over a period of six

months, and included every detail of the work and every act of the canal officials. In that report the committee said :

The work authorized by the Spooner act has been initiated and extensive preparations for a rapid prosecution of it have been made. The Canal Zone has been placed in a satisfactory sanitary condition, adequate shelter for the workmen has been provided, hospitals of very large capacity have been made ready, as is evidenced by the opinions of experts who have testified before the committee, and we are fortunately now in possession of a vast array of facts and figures affecting the prosecution of the undertaking that have not until now been available. This is due to the fact that the preparatory work has for two years been prosecuted with patient, intelligent judgment and earnest effort by those intrusted with the direction and supervision of the work.

SANITATION.

The work of sanitation thruout the Canal Zone has been continued with great energy during the year. The most serious problem that confronted the health department when it was organized two years ago was the elimination of yellow fever, which had been an important factor in the failure of the French company and was regarded as one of the most formidable obstacles to American success. This obstacle has been completely removed. Altho there has never been so large a number of nonimmunes on the Isthmus as during the past year, there has not been a single well-authenticated case of yellow fever during that period. The last case in Panama was on November 11, 1905. There was a single case in Colon on May 17, 1906, which was officially declared to be yellow fever, but the medical authorities were not clear that this diagnosis was correct. It did not result in the spread of the infection.

The Isthmus is now completely free of this disease, an achievement which demonstrates the high efficiency of the health department. In combating other diseases the department has been scarcely less successful. The average daily sick rate among employees of the Commission during the ten months from January 1, 1906, to October 31, 1906, was 28 per thousand, which is no higher than might be expected in an equal body of laborers engaged in construction work in any part of the world. During the same period the death rate among the whites was about 17½ per thousand, and among the blacks nearly 53 per thousand. In his report for October, 1906, the chief sanitary officer said:

It is rather a remarkable fact that among the 6,000 Americans on the Isthmus a death from disease has not occurred in the past three months. Take 6,000 people in New York City, selected at random, and estimating their death rate on what occurred in New York City last year, they would have had about 30 deaths from disease. Of course, this is more or less accidental, but I think it pretty good proof that the conditions are not so unfavorable to Americans, when it is possible for a body of 6,000 people, including some 1,200 women and children, to spend three months without a single death from disease.

Smallpox has been introduced twice within the year. Early in July child came in to Colon from Cartagena, developing smallpox after being in three days. From this 1 case, in the contiguous houses, some 40 cases developed, but by the end of August it had entirely disappeared, only 2 deaths resulting.

On November 1 a Colombian came in to Colon from Cartagena, developing smallpox two days later, but the population had been so thoroly vaccinated that there was no further spread of the disease from this case.

During the year there were no cases of plague, tho there were 2 in 1905.

A full statement of the work of the health department during the year will be found in the report of Governor Magoon, which is appended. (Exhibit A.)

CARE OF EMPLOYEES.

Great progress has been made during the past year in providing for the welfare and comfort of the employees. The Commission now has sufficient buildings to provide quarters for all its bachelor employees. These buildings are screened, and provided almost universally with running water and with modern plumbing, and are comfortably furnished. In addition to these buildings, 335 separate houses and 13 larger buildings have been constructed for married quarters, providing accommodations for 375 families. There are still many married men, however, for whom no quarters are available, but upon the completion of the houses now authorized these will be provided for. There are now approximately 1,200 American women and children on the Isthmus.

The efforts of the Commission during the year to provide some method by which employees might obtain meals at a reasonable rate have been entirely successful. Hotels and mess houses were established along the line of the canal, and at present the Commission maintains 14 of these places for the benefit of white employees. These hotels or mess houses were not opened originally by the Commission as a permanent arrangement, but as a substitute until an experiment could be made as to whether it was better to operate them directly or under contract. The result has been generally satisfactory. During the first few months a loss of over \$14,000 was shown, but at the end of the fiscal year, or June 30, 1906, a total net gain for the entire period of operation of over \$5,000 was shown. It is not intended, however, to make any profit whatever, but that every cent that is taken in shall be given back to the employees in the form of the best food that it is possible to obtain for the money or in reduction of price to employees when improvement in the quality of food and character of service is unattainable.

RECREATION FOR EMPLOYEES.

The Commission has made some progress in its efforts to provide means of amusement and recreation for its employees, but not so much as would have been the case had it not been for the continued stress of work of more vital importance. Altho the Commission in November, 1905, authorized the construction of clubhouses at a cost not to exceed \$7,500 each, it has not been found possible as yet to erect many new buildings under this authority, but a building has been set aside at Cristobal for the use of the club there, and four are in process of construction—at Culebra, Empire, Gorgona, and Cristobal. Two of these, at Culebra and Empire, will be ready for use early in 1907. The four structures are alike in design. They provide a front building of two stories connected with a rear building of one story. The front building, which will be 133 feet by 45 feet, will contain a social parlor, a card room, a billiard and a writing room on the first floor, and an assembly hall 67 feet by 27 feet, free from any columns to break the dancing space, on the second floor. The rear building, which will be 100 feet by 28 feet, will contain double bowling alleys 100 feet long, a gymnasium 52 feet long, shower baths, and over a hundred single lockers.

A comprehensive plan has been devised whereby the Commission, working in conjunction with the Young Men's Christian Association, will manage these and other similar buildings in the chief labor centers. Each club will have its board of directors selected from its own membership, but all clubs will be under the control, so far as broad principles are concerned, of a general board to be selected by the Commission. Authority has been given by the Commission for the construction of a suitable number of appropriate buildings to accommodate properly those who wish to attend religious services, such buildings to be available for all denominations and creeds. It is contemplated to erect at such points as necessities seem to require, plain, two-storied buildings, the upper floors to be fitted up as lodge rooms for the various orders and societies formed, or to be formed, among the employees, and the first floors to be used for religious services. The use of the buildings for lodge and religious purposes is to be regulated by means of allotment or mutual agreement as to time. The problem of entertainment and recreation, however, has been solved in a measure by the employees themselves, who have established clubs of various kinds, fraternal orders, and athletic associations in various places along the line of the canal.

PERSONNEL.

The force employed on the Isthmus on November 1, 1906, was as follows:

In November, 1905, the Commission's employees numbered approximately 17,000, and in November, 1906, the number was practically the same. Of these, 12,612 were under the department of construction and engineering; 1,129 under the division of material and supplies; 2,291 under the department of government and sanitation, and 137 in the auditing and disbursing offices.

Of the 17,000 men, about 3,700 were on the gold rolls, virtually all white Americans, and 13,300 on the silver rolls, mainly aliens. This number does not include 4,000 people employed on the Panama Railroad.

The above number represents the approximate number that was actually on the pay rolls for the end of November, 1906, and does not include a large number of men—especially West Indian laborers—who for various reasons are not continually employed by the Commission, but who possibly work a few months each year and who are nevertheless under the jurisdiction of the Commission as far as quartering, police, and sanitation are concerned. Including these men, there are in round numbers about 25,000 men under the direct jurisdiction of the Isthmian Canal Commission and Panama Railroad Company.

UNSKILLED LABOR.

Another year's experience with negro laborers from nearby tropical islands and countries has convinced the Commission of the impossibility of doing satisfactory work with them. Not only do they seem to be disqualified by lack of actual vitality, but their disposition to labor seems to be as frail as their bodily strength. Few of them are steady workers. The majority of them work just long enough to get money to supply their actual bodily necessities, with the result that while the Commission is quartering and caring for about 25,000 men the daily effective force is many thousands less. Many of them settle in the jungle, building little shacks, raising enough to keep them alive, and working only a day or two occasionally, as they see fit. In this way, by getting away from the Commission's quarters, practical control over them is lost, and it becomes very difficult for foremen to calculate on keeping their gangs filled.

The most serious question in regard to this class of laborers is that of feeding them, ordinary methods having failed to induce them to take sufficient nourishment to give them the physical strength necessary to enable them to work efficiently. To such an extent is this true that the Commission is seriously debating whether to make the

basis of employment a certain rate per hour and board, or a certain rate per hour and deduct a fixt amount per day for board.

The experiment with laborers from northern Spain has proved very satisfactory. Their efficiency is not only more than double that of the negroes, but they stand the climate much better. Since the 1st of January there have been about 900 of these at work on the canal, and of this number not one has died from disease. They have malaria in about the same degree as the white Americans, but not at all to the extent that the negroes have it, and there has not been a single case of yellow fever among them. Their general condition is about as good as it was in their homes in Spain, and they stand the climate very much better than the negroes. The chief engineer is convinced by this experiment that "any white man, so-called, under the same conditions, will stand the climate on the Isthmus very much better than the blacks, who are supposed to be immune from practically everything, but who, as a matter of fact, are subject to almost everything."

EMPLOYMENT AND TRANSPORTATION.

The demands upon the steamships of the Panama Railroad Company for transportation have been so heavy during the past few months as to more than exhaust their capacity, requiring the Commission at times to secure transportation for some of its employees over other steamship lines. This is due to the continued movement of new appointees to the Isthmus and the coming and going between the Isthmus and the United States of employees on their annual leave of absence. Many of them, an increasing number, are accompanied by their families.

During the period from December 1, 1905, to December 1, 1906, 4,869 persons were tendered employment within the United States for service on the Isthmus. Of this number, 3,962 accepted and were accordingly appointed, covering 102 different grades of positions. Of the number who accepted and were appointed 3,243 persons have been transported to their places of duty, the remainder having failed to sail after selection and appointment. Eight hundred and thirty-four members of families of employees and 929 persons returning from leave of absence have been furnished transportation at the reduced Government rate during the period from New York City over the Panama Railroad Company's line of steamers. This number does not include a few returning employees and members of families who sailed from New Orleans and San Francisco.

Employees are secured either thru the Civil Service Commission employment agents, or personal application.

On January 12, 1906, by Executive order of the President, employments on the Isthmus of Panama were excepted from civil service examination, with the exception of the following nam

Clerk (all kinds), bookkeeper, stenographer, typewriter, surgeon, physician, interne, trained nurse, and draftsman.

Applications for employments in the excepted positions, including, among others, all the mechanical trades, railroad and civil engineering positions, are selected by means of employment agents of the Canal Commission traveling in various sections of the United States. The Commission is in daily receipt of a large number of applications from persons with ordinary all-around experience. The service of these persons, however, can not be utilized, as they have not specialized along any particular line of work.

ENGINEERING WORK OF THE YEAR.

The engineering work of the year has been almost entirely preparatory. Owing to the delay in the decision as to the type of canal it was impracticable to locate permanent and well-arranged dumping grounds for the disposal of waste material. The general plan of the work which has been done in the Culebra cut has been in putting the various levels in proper condition for the installation of the maximum number of steam shovels, and the construction of a system of railways on each level and a double track at the bottom, connecting with yards established along the line of the Panama Railroad. While no special effort has been made to get out yardage, yet during the fiscal year the amount of material excavated from the canal prism was 1,500,000 cubic yards, as against 742,000 cubic yards the previous fiscal year.

Notwithstanding the rainy season, which extends from the end of April to the end of December, there was during the month of August, 1906, a total excavation in the Culebra cut of 244,844 cubic yards, which was the largest amount taken out up to that time during any one month since the canal has been under American control. In September, 1906, the total excavation was 291,450 cubic yards, and in October, 1906, it was 326,000 cubic yards. Most of the material hauled out during the year was taken to the old French dumps, for the reason stated above. Several new dumps have recently been placed—two at Miraflores, two at Pedro Miguel, one at Rio Grande, one at Mamei, one at Bas Obispo, one at Haut Obispo, and a very large one, 2 miles long, at Tabernilla. A large amount of the material taken from the cut has been used for filling for the double-tracking of the Panama Railroad. At the close of the fiscal year, which was practically the date of the decision as to the type of canal, the conditions in Culebra cut regarding the installation of shovels and consequent large increase in the output, were generally satisfactory. At the beginning of the fiscal year there were 10 shovels erected and ready for work. There was available in September, 1906, a total force of 46 steam shovels, of which 27 were at work in the canal prism, 2 outside the prism, 4 on the Panama Railroad, and the rest set up and ready for work in various places.

RECEIVING AND FORWARDING YARDS.

The main receiving and forwarding yards, one on each side of the cut, which are to act as clearing houses for the dirt trains moving down from the various levels of the cut to the yards, there to be switched and forwarded over the main line of the Panama Railroad for final disposition, are practically completed at Pedro Miguel on the Pacific side and Las Cascadas on the Atlantic side.

TERMINAL YARDS AND WHARVES.

In improving and enlarging its terminal facilities the Commission has pursued the policy of expending upon such facilities situated within the Republic of Panama only such sums as are sufficient to keep them in a proper state of repair, and of locating all necessary additions within the Canal Zone. Following out this policy, and in order to meet the heavy demands of enlarged traffic at the Atlantic terminus, two large wharves have been completed at Cristobal, each capable of accommodating at the same time two ships of the largest draft. One of these has been roofed over to provide proper protection to shipments, and both are equipped with the most modern appliances. A modern coal-hoisting plant has been established which will reduce the cost of handling coal from 23 to 6 cents per ton, and will make it possible to discharge coal vessels approximately every five days. The harbor has been dredged so that the largest ships can use the new wharves, and in future all the steamers of the Panama line will dock there. The terminal railway yards at Cristobal are finished and in operation, and they would be a credit to any railway in the United States. The La Boca yard, work on which was delayed by reason of the uncertainty of the type of canal, is advancing rapidly, and is about 75 per cent finished, as is also the double track addition to the steel pier at that point. The new wharf at La Boca is completed, and is connected with the old steel wharf, thereby providing berths for three additional ships.

WATER AND SEWER SYSTEMS IN PANAMA.

The water system of Panama is complete, with the exception of the house connections, of which the larger part have been made, and the remainder are being made as rapidly as the plumbing companies of the city can do the work. Fire hydrants and cranes for the use of water carts have also been placed. At the end of the dry season last year there was still a year's supply of water remaining in the reservoir, which showed that unless Panama should grow very rapidly and its use of water increase far beyond all expectations, there would be an ample supply of water for all purposes for many years to come.

Since the installation of the water service two serious fires have occurred in the city, and the reservoir capacity and pressure have proved ample to save the city from the destruction which would undoubtedly have otherwise ensued. When the water was first turned on there was a noticeable taste to it, but this has practically disappeared, and its use by the inhabitants has become nearly universal. The sewerage system of the city of Panama is virtually completed. All the principal streets have been thoroly paved with the best variety of paving brick, laid on concrete foundations. Other streets, most of which are short and unimportant, are to be macadamized, and this work has already begun. It is believed that the city of Panama is to-day the best paved, the best watered, and the best sewered city in Central America, or in the northern half of South America.

WATER AND SEWER SYSTEMS IN COLON AND CRISTOBAL.

Colon and Cristobal now have an abundant supply of pure and wholesome water, drawn from a receiving reservoir 2 miles back from Mount Hope, and which has a capacity of about 508,000,000 gallons. Within both places a system of mains has been designed and approved and is being laid as rapidly as possible. All houses in Cristobal occupied by whites have been connected with this system. All other houses, as fast as they are completed, are being connected, and Cristobal and Colon to-day have an adequate water supply for all purposes. Street hydrants have been placed at every 700 feet in Colon to supply the inhabitants with water until the house connections are made. A complete sewer system has been approved for Colon, and work for its installation has been begun. Front street, the main thorofare of the city, has been paved with vitrified brick; other streets are being raised and their surfaces covered with crusht rock.

Full and detailed information of the work described under the above titles, together with the facts about the installation of sewerage and water systems for the various large labor camps and towns along the line of the canal will be found in the report of the chief engineer (Exhibit B.) In the same report there will also be found specific information in regard to the topographical work of the year; the various borings and surveys along the line of the canal; surveys and soundings in the Bay of Panama; dredging for a drainage system in Colon; dredging in the harbors of Colon and La Boca; repairs to plant; enlargement of and work in the machine shops, and the full report of the year of the division of building construction, the mechanical division, the division of meteorology and river hydraulics and branch of labor and quarters.

THE PANAMA RAILROAD.

Great progress has been made during the year in enlarging and improving the facilities of the Panama Railroad so as to enable it to perform adequately its double functions of handling general commercial business and at the same time serving as the essential instrument in the construction of the canal. An entirely new organization of the personnel of the railroad has been created, with a distinct assignment of duties to the head of each department, which went into effect on March 1, 1906. In order to relieve the chief engineer, Mr. Stevens, who was both vice-president and general manager of the road, of some of the details incident to its operation, Mr. Bierd, as a merited reward for efficient service, on recommendation of Mr. Stevens, was promoted on April 23, 1906, from superintendent to general manager. Evidence of the improved efficiency of the road and its terminals is afforded in the fact that during the last eight months of the present year the steamers of the Panama Railroad Company operated out of New York, with sailings every five days, have been promptly discharged and loaded on arrival at Colon, and the schedule has been properly maintained, a condition that had not been possible previously with the tonnage now handled.

The service has continued to improve to such an extent that on November 9, 1906, a new schedule cutting off one day from the lay over at each end of the route was put into effect. There has been no congestion of freight on the Isthmus since the middle of December, 1905, and with the completion of new wharves and docks and the addition of larger equipment and heavier power constantly arriving, there is slight possibility of congestion in the future. A conference, which was held on the Isthmus in April last, between the chairman of the Commission and the managers of the Pacific Mail Steamship Company, in which representatives of the steamship lines participated, resulted in a settlement of all points of difference as to the handling of freight across the Isthmus and an agreement was reached to work in harmony in the interest of the entire route.

The reconstruction of old tracks and the laying of new ones, and the double tracking of the Panama Railroad for nearly its entire length, which is of vital importance to the removal of spoil from the cut, has been pressed forward with all possible energy. Of the 35 miles of additional track contemplated about 20 miles have been completed and are ready for use, and the remaining 15 miles are about 75 per cent completed. The probability is that sections of the road will require three or four tracks.

RAILWAY EQUIPMENT.

The new railway equipment, ordered in 1905, partly by the Commission and partly by the Panama Railroad Company, has in large measure been delivered on the Isthmus. Of the portion ordered by

the Commission there have been delivered 92 locomotives, eight hundred 40-ton flat cars, 325 dump cars, four 10-ton and four 20-ton locomotive cranes, 2 dipper dredges, and 1 tugboat. Of that ordered by the Panama Railroad Company there have been delivered 24 locomotives, 500 box cars, 12 caboose cars, 6 passenger coaches, 10 refrigerator cars, 100 ballast cars, 2 flat cars, 1 tugboat, 2 wrecking cranes, and 1 pile driver.

MATERIALS AND SUPPLIES.

The practise established in the spring of 1905 of calling for bids on materials and supplies on the basis of the price covering delivery on the Isthmus has been continued, which gives each section of the country equal opportunity for bidding on the materials needed, so that the manufacturers, railroads, and steamship lines in each section and thru each port may figure on the business on a combination of prices and rates.

The general purchasing officer is located at Washington, with assistant purchasing and shipping agents at New York, New Orleans, San Francisco, and Tacoma. In addition to having the circulars of the Commission inviting bids on materials distributed from the offices named, an arrangement was made early in the year also to have them distributed thru the offices of the quartermasters of the Army at Chicago, St. Louis, Jeffersonville, Ind., and Atlanta, Ga. The advertisements of the Commission show where its circulars inviting bids may be obtained, and the arrangement made for distributing them enables all persons desiring to bid to obtain them within a short time after they are issued.

The total amount of purchases made for the year ended June 30, 1906, was \$8,743,482.05.

The work of the division of material and supplies on the Isthmus has been reorganized and new and modern methods of handling material have been installed. One general storehouse has been established at Mount Hope, near the Atlantic entrance to the canal, which is the general supply depot for the entire work on the Isthmus. The local storehouses at points along the line carry only sufficient stock to meet the requirements of the various departments at work in their respective territories, and replenish their stocks by making requisitions on the general storehouse. This consolidation of stock at the general storehouse has made possible a reduction in the quantity of stock carried, and has also effected a large saving on pay rolls. All materials and supplies received on the Isthmus are checked, inspected, and taken into stock promptly, so that the invoices are received and returned promptly to the Washington office for payment.

The total stock of materials and supplies on hand June 30, 1906, in charge of the division of material and supplies, which have been purchased since the United States took charge of the work on the Isthmus,

amounted to approximately \$1,400,000. During the month of June, 1906, the division of material and supplies disbursed materials to the various departments to the value of more than \$1,200,000, from which it will be seen that taking that month as a basis there was on hand on June 30, 1906, in charge of the division of material and supplies an average of only about thirty-five days' supply of materials.

FISCAL AFFAIRS.

Complete information in respect to the fiscal affairs of the Isthmian Canal Commission and government of the Canal Zone, covering appropriations of the Congress, revenues of the Canal Zone, and expenditures to June 30, 1906, and September 30, 1906, will be found in Exhibits C, D, E, F, G, and H.

UNITED STATES CURRENCY FOR EXPENDITURE ON THE Isthmus.

Prior to April 30, 1906, United States funds were furnished by bankers on the Isthmus to the disbursing officer under an agreement fixing three-fourths of 1 per cent premium as a compensation for the collection of his drafts upon the assistant treasurer, New York. This agreement expired April 29, 1906, and upon its expiration the shipment of United States money from the New York subtreasury direct to the disbursing officer on the Isthmus was authorized, and the disbursing officer was further authorized to sell his drafts against New York and thus obtain funds for disbursement. From May to October, 1906, inclusive, under this arrangement funds were secured amounting to \$5,867,534.85. Of this sum, \$5,320,966.42 Panamanian silver (equivalent to \$2,660,483.21 United States gold) and \$2,077,051.64 United States gold was obtained from the sale of the disbursing officer's drafts on New York at par, and \$1,130,000 was shipped from the subtreasury at New York, the cost of transportation at the rate of three-eighths of 1 per cent being \$4,237.50.

Under the banker's agreement the cost of obtaining \$3,207,051.64 United States gold included above would have been \$24,052.89, and as the \$4,237.50 for the transportation of \$1,130,000 from New York to the Isthmus is the only expense incurred in securing the entire \$5,867,534.85, the net saving under the new arrangement is \$19,815.39.

CLASSIFICATION OF THE CLERICAL FORCE ON THE Isthmus.

By direction of the chairman of the Isthmian Canal Commission the secretary of the Commission prepared a plan of classification of the clerical force on the Isthmus, the primary object of which was to establish uniformity of payment for similar service in all departments. This divides the force into five permanent classes and one temporary class, which will be abolished when the present positions in it shall

become vacant, as no additions are to be made. The plan, which rids the service of all inequalities of payment, was adopted by the Commission and went into effect on September 1, 1906.

LOCK CANAL DECREED.

The Board of Consulting Engineers created by the Executive order of the President under date of June 24, 1905, for the purpose of considering and deciding the question of type of canal, failed to reach a unanimous agreement. It presented two reports on January 10, 1906—a majority report, signed by eight members, of whom five were the representatives of foreign governments, favoring a sea-level canal, and a minority report, signed by five members, all of whom were Americans, in favor of a lock canal at an elevation of 85 feet.

The Isthmian Canal Commission, to whom these reports were submitted for consideration, made a report to the Secretary of War on February 5, 1906, one member dissenting, in favor of the lock canal recommended in the report of the minority of the Board of Consulting Engineers. The dissenting member, Civil Engineer Endicott, U. S. N., submitted a minority report in favor of the sea-level plan recommended in the report of the majority of the Board of Consulting Engineers. There was submitted with the Commission's report a statement by Mr. Stevens, the chief engineer of the Commission, recommending the adoption of the lock-canal plan.

On February 19, 1906, the Secretary of War transmitted these various reports to the President in a letter in which he concurred with the Isthmian Canal Commission in recommending the adoption of the lock-canal plan, and on the same date the President transmitted the Secretary's letter, together with the various reports, to Congress, in a letter in which he concurred also in the Commission's recommendations. All these reports, together with the letters of transmittal, are published in a separate document, and consequently are not included in the Commission's annual report.

The reports were before Congress from February 19, 1906, till near the date of adjournment on June 30, 1906. On June 21 the Senate, by a vote of 36 ayes to 31 noes, passed the following act:

AN ACT to provide for the construction of a lock canal connecting the waters of the Atlantic and Pacific oceans, and the method of construction.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That a lock canal be constructed across the Isthmus of Panama connecting the waters of the Atlantic and Pacific oceans, of the general type proposed by the minority of the Board of Consulting Engineers created by order of the President under date of January twenty-fourth, [June twenty-fourth] nineteen hundred and five, in pursuance of an act entitled "An act to provide for the construction of a canal connecting the waters of the Atlantic and Pacific oceans," approved June twenty-eighth, nineteen hundred and two.

The House concurred, without division, on June 27, and on June 29 the act became law thru approval of the President.

OTHER LEGISLATION.

In addition to decreeing the lock type of canal, Congress at its last session past the following measures:

The provisions of the act entitled "An act relating to the limitations of the hours of daily service of laborers and mechanics employed upon the public works of the United States and of the District of Columbia," approved August first, eighteen hundred and ninety-two, shall not apply to alien laborers employed in the construction of the Isthmian Canal within the Canal Zone.

Approved February 27, 1906.

The provisions of an act entitled "An act relating to the limitations of the hours of daily service of laborers and mechanics employed upon the public works of the United States and of the District of Columbia," approved August first, eighteen hundred and ninety-two, and of an act entitled "An act making appropriations to supply urgent deficiencies in the appropriations for the fiscal year ending June thirtieth, nineteen hundred and six, and for prior years, and for other purposes," approved February twenty-seventh, nineteen hundred and six, shall not apply to unskilled alien laborers and to the foremen and superintendents of such laborers employed in the construction of the Isthmian Canal within the Canal Zone.

Approved June 30, 1906.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That purchases of material and equipment for use in the construction of the Panama Canal shall be restricted to articles of domestic production and manufacture, from the lowest responsible bidder, unless the President shall, in any case, deem the bidder or bidders therefor to be extortionate or unreasonable.

Approved June 25, 1906.

LOCATION OF LOCKS AND DAMS.

Since the decision by Congress, in June last, decreeing the construction of a lock canal at an elevation of 85 feet, the Commission has fixt definitely the location, on the Atlantic side, of three sets of locks and a great dam at Gatun, and, on the Pacific side, of one set of locks at Pedro Miguel and two sets at La Boca and two dams in the vicinity of La Boca, a large one between Sosa High and Corozal, and a smaller one between Sosa High and San Juan Hill.

PROPOSALS TO FURNISH CHINESE LABOR.

On August 20, 1906, the Commission issued invitations for proposals to furnish 2,500 Chinese laborers for work upon the canal for a period of not less than two years with the privilege of increasing the number to 15,000. Four bids were presented, of which the only two accepting the Commission's terms were also the lowest. These bids agreed to furnish the laborers from 9 to 11 cents per hour, dependent upon the number actually employed. The selection of the bidder has not yet been made.

CONSTRUCTION OF THE CANAL BY CONTRACT.

On October 9, 1906, an invitation was issued by the Commission for proposals to complete the construction of the canal upon a percentage basis. The plan upon which bids were invited contemplates a competition for the work between two or more groups of contractors, each group composed of contractors who have achieved a significant success in at least one of the departments of construction involved in the present undertaking and whose combined experience covers the whole task. By the terms of the invitation proposals by single individuals or firms whose experience and whose organizations must be relatively limited are therefore discouraged.

The contractor who receives the reward will be paid an agreed percentage upon the estimated reasonable cost of the actual construction work as fixt by an engineering committee, of whom the contractor will name two members and the Commission three. This committee will likewise, from all available data, estimate a reasonable time for the completion of the canal; and a system of premiums and penalties to be paid to the contractor accordingly as the work is completed within or beyond such estimated cost and time is provided for. The amount of percentage to be paid the contractor fixes the basis of competition.

The reasons why the construction of the canal by contract seemed advisable, and why the special form adopted commended itself above others, are set forth in detail in a letter addrest to the Secretary of War by the Chairman of the Commission, under date of August 29, 1906, Exhibit I. The invitation and form of contract as finally adopted are set forth in Exhibit J. The bids received will be opened on January 12, 1907.

PLAN OF REORGANIZATION.

In harmony with the plan of procuring a more direct method of administering the affairs of the Commission, an Executive order was signed by the President on November 17, 1906 (Exhibit K), during his visit to Panama, amending the Executive order of April 1, 1905, under which the Commission had been previously reorganized. The work is now divided among the following departments: The department of engineering and construction, the department of law and government, the department of sanitation, the auditing department, the purchasing department, the disbursing department, and the department of labor, quarters, and subsistence. The head of each department is rendered directly responsible for the work carried on under his direction. They are all appointed by and report directly to the chairman of the Commission, who, in turn, is responsible to the President thru the Secretary of War, for the conduct of the enterprise as a whole.

The principal changes effected over the order of April 1, 1905, are the abolition of the executive committee, the consolidation of the legal and governmental departments, and the separation of the sanitary department from the governmental department. In the absence of the Chairman from the Isthmus, the Chief Engineer, who is the head of the department of construction and engineering, acts for him in all matters requiring immediate attention, and his action remains effective unless disapproved of by the Chairman.

Respectfully submitted.

T. P. SHONTS,
Chairman.

The honorable the SECRETARY OF WAR.

EXHIBIT A.

REPORT OF THE GOVERNOR OF THE CANAL ZONE.

NOVEMBER 1, 1905, TO SEPTEMBER 30, 1906.

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CANAL ZONE, Isthmus of PANAMA,
EXECUTIVE OFFICE,
Ancon, October 1, 1906.

SIR: I have the honor to submit the following report of the Department of Government and Sanitation of the Isthmian Canal Commission for the period from November 1, 1905, to September 30, 1906:

The execution of practically all the duties assigned to the head of this department by the President's order of April 1, 1905, requires the exercise of some function of government, and in carrying on the work

of the department effort has been made to give prominence to the fact that it is done as a part of the development and maintenance of a government for the Zone. The necessity of a consistent adherence to this policy is increasingly apparent. We have acquired the right and assumed the burden of exercising sovereignty in the Canal Zone. Our duty to ourselves, to Panama, and to the world at large requires that we should exercise this right, so far as the conditions in the Canal Zone permit, in accordance with the traditions and principles which have molded the history of our country. There is apt to be a feeling of impatience in some quarters in the United States when recognition of any principle or policy causes temporary inconvenience. If, in our administration of the Canal Zone, undue concessions are made to this tendency, this will appear to Panama as evidence of a purpose on the part of the United States to disregard obligations, contractual or moral. It will also create suspicion among other Central and South American countries that the declaration of the United States of disinterestedness in their affairs is not sincere. As a further result, Americans on the Isthmus will be prompted to disregard the rights of others with whom they come in contact here, and the feeling will be created that those rights are not to be measured by the standards of our own country, but only by immediate convenience. For these reasons emphasis has been given to the idea of government. In the building of the canal by the United States American ideals are being preserved. The courts of the Zone are open to all persons, without respect to nationality or station; the police protect the persons and property of all; taxation is uniform and equitable; and, it is believed, the exercise of governmental authority on the Zone has the respect of all and the admiration of those who value rightly organized government.

RELATIONS WITH THE REPUBLIC OF PANAMA.

The relations between Panama and the Canal Zone Government continue to be satisfactory. The aim of the Zone Government has been to defer in all matters to the wishes of the Panama Government, where it could be done without detriment to the interests of the United States. The action of the Panama Government has been marked by a friendly desire to assist in every way possible the Zone Government and the construction department of the Commission in the execution of the duties assigned to them. Questions involving the power of sovereignty in the Canal Zone conferred upon the United States by Panama have from time to time come up for discussion, and this power has become more clearly defined.

Among the subjects that have given rise to conferences and correspondence are the collection of taxes in the zone, the commissaries established by the Commission to supply its employees with imported foodstuffs and merchandise, and especially the sale of tobacco in the commissaries; the acceptance of commissary coupons by merchants of the Isthmus and their subsequent redemption; the illegal introduction of Chinese into Panama; the Commission's contract with the banks of Panama for securing money for use on the Isthmus; the adoption of water rates and plumbing regulations for Panama and Colón; the regulation of immigration to the Isthmus, and the sanitation of Bocas del Toro, on the Atlantic coast. Progress has been made in

survey of the provisional delimitations of the Zone, and now that the type of canal has been decided and the final center axis can be laid out, it will soon be possible to take up the question of the definitive boundaries of the Zone.

The first six months of the present year was a period of heated political discussion in the Republic of Panama in anticipation of the elections for municipal officers and for delegates to the National Assembly, which were held on the last Sunday in June and on the first Sunday in July. Altho there have been no well defined differences of principle between the conservative or government party and the liberal party, which is in opposition, nevertheless factional feeling ran high. It was my privilege, as well as my duty, to urge upon the leaders of both parties, both officially and personally, the necessity at this critical and formative period in the history of the Republic, of assuring a fair, impartial, and peaceful election, and of safeguarding their country against the possibility of chronic revolution. At the same time appropriate steps were taken to protect the interests of the United States against all emergencies. The elections were consummated without undue violence and resulted in strengthening the hold of the present government upon the country.

EXTRADITION WITH PANAMA.

After negotiations extending over more than a year a basis of extradition of criminals between the Canal Zone and Panama was at last arrived at and was put into effect shortly before my departure from the Isthmus by an executive order by me as Governor, upon direction of the Secretary of War, by authority of the President, authorizing extradition from the Canal Zone into Panama, and by a decree of the President of Panama authorizing extradition from Panama into the Zone. Copies of the executive order and decree are attached hereto.

THE RESTRICTION OF IMMIGRATION.

By the resolution of the Commission adopted at its seventy-ninth meeting, February 20, 1905, under authority of the instructions issued by the President of the United States on May 9, 1904, for its guidance, the Governor of the Canal Zone is empowered to exclude from the Zone persons of the following classes who were not actually domiciled within the Canal Zone on the 26th of February, 1904, viz: Idiots, the insane, epileptics, paupers, criminals, professional beggars, persons afflicted with dangerous or loathsome diseases, those who have been convicted of felony, anarchists, those whose purpose it is to incite insurrection, and those whose presence it is believed would tend to create public disorder and endanger the public health, or in any way impede the prosecution of the work of opening the canal. This authority is sufficient to prevent the immigration into the Canal Zone of undesirable persons of every description. The immigration law of the Republic of Panama was not, however, so sweeping and made no provision for the exclusion from the territory of the Republic of paupers physically incapacitated for manual labor. As it is impracticable to exercise any supervision over persons coming from the Republic of Panama into the Canal Zone no regulations adopted by

the government of the Canal Zone restricting immigration could possibly be enforced as long as the requirements of the Government of Panama were less stringent. It resulted, therefore, that large numbers of pauper laborers entered the Zone thru Panamanian ports, attracted by the prospect of employment upon the canal, but incapacitated either by old age or by disease for the performance of manual labor. They eventually drifted into the hospitals of the Isthmian Canal Commission, where they remained as a permanent burden, unless returned to their homes at the expense of the Government. This remedy, when practicable, was costly, and frequently it could not be applied, owing to the fact that unless these persons can prove their nationality they are not permitted to land in their native islands and are refused passage by the steamship companies. It was imperative that some means should be devised to prevent further immigration of persons of this class. The facts were brought to the attention of the Government of Panama and it was requested that the immigration law of the Republic be amended by including among the prohibited classes those who, in the opinion of the quarantine officers, are in such physical condition from age, disease, or infirmity as to render them incapable of earning a living by manual labor. The Government of Panama recognized the advisability of this amendment, which was effected by the promulgation of executive decree No. 37, dated March 17, 1906. This decree provided substantially that no immigrant should be permitted to land in the territory of the Republic of Panama unless he had in his possession a sum of not less than 15 balboas, or was under contract to the Isthmian Canal Commission, and that no immigrant should be permitted to land who, in the opinion of the quarantine officer, was incapable of earning a livelihood by manual labor unless he could show that he had other means of providing for his support. As it was feared that the decree in this form was too stringent, and would operate to prevent the voluntary immigration of laborers of the same class that the Commission is constantly importing under contract, it was provided by an amendatory decree that the requirement of the possession of a sum of money equivalent to 15 balboas should not apply to able-bodied laborers who might prove acceptable for employment under the Isthmian Canal Commission.

DEPORTATIONS AND REPATRIATIONS.

The same order of the President, which serves as authority for the restrictive immigration regulations of the government of the Canal Zone, empowers the Governor to deport from the Zone newly arrived aliens of the prohibited classes. Under this warrant it has been the policy of the government of the Canal Zone to return to their respective places of origin all vagrants, habitual drunkards, and criminals falling under the observation of the Police Department and all persons reported by the Chief Sanitary Officer as incapacitated by disease for the performance of manual labor or further service under the Isthmian Canal Commission. Persons of the same description, not newly arrived upon the Isthmus, have been furnished transportation to their native countries when they were willing to return. The number of such deportations and repatriations up to the present time has been approximately 100.

THE FIRE OF JANUARY 12, 1906, IN THE CITY OF PANAMA.

On January 12, 1906, a fire broke out in the city of Panama, in the district known as the Malambo ward, which resulted in the destruction of about thirty dwelling houses occupied by the poorer classes. The individual losses were not large, but were of the utmost importance to the sufferers. It is asserted that the fire originated in a house which was being fumigated for the destruction of mosquitoes, and that it was due to the carelessness of the fumigating gang. The owners of the property accordingly presented claims against the Isthmian Canal Commission to cover their losses. The Comptroller of the Treasury was asked to decide whether the Isthmian Canal Commission had authority to adjudicate claims on account of fires caused by fumigation, and rendered a negative opinion. He declared, however, that the value of the property destroyed might be assessed by a joint commission, appointed by the Government of the United States and the Republic of Panama, for the condemnation of property required by the United States in the construction of the canal, as provided in the treaty, and that the legality of the awards thus established could then be tested and decided. The Government of Panama was advised of this decision of the Comptroller and it was agreed that, when the joint commission provided for in the treaty should be appointed, a test case would be acted upon by the joint commission and submitted to the Comptroller for final decision.

HARBOR REGULATIONS.

To provide for the maintenance and care of the harbors of the Canal Zone, and in order that proper rules might be established to govern the movements of vessels within those harbors, the Governor of the Canal Zone, under date of December 8, 1905, promulgated an executive order creating the positions of Harbor Master and Deputy Harbor Master, and making it the duty of these officers to determine where vessels shall lie at anchor in the harbors of Ancon and Cristobal; to see that all rules and regulations that govern the occupation of such harbors are observed; to settle all disputes as to wharf rights and fees; to decide as to the order of time in which movements to and from berths shall be made, and to perform such other services as may hereafter be prescribed by competent authority. The same order created a Board of Examiners for pilots, prescribed the conditions under which licenses may be issued to pilots for the harbors of Ancon and Cristobal, and prescribed the maximum fees to be charged and collected by pilots. The duties of Harbor Master and Deputy Harbor Master are at present discharged by officials of the Panama Railroad Company without additional compensation. The steamship companies whose vessels call regularly at the ports of the Canal Zone usually employ their own pilots, and other vessels make use of pilots in the employ of the Panama Railroad Company. The enforcement of the provisions of this order relative to pilots protects ship-owners against the impositions of incompetent persons claiming a knowledge of the harbor, and, in case of accident, obviates certain difficulties in the collection of marine insurance, as underwriters are prevented from avoiding their obligations on the plea that the vessel at the time of the loss was not in charge of a licensed pilot.

THE PIPE LINE OF THE UNION OIL COMPANY.

Under date of January 10, 1906, the Secretary of War granted to the Union Oil Company of California a concession for the construction and operation of a pipe line for the transmission and delivery of oil over land owned by the United States and the Panama Railroad Company in the Canal Zone. This company had previously obtained, under date of October 30, 1905, a similar concession from the Government of the Republic of Panama for the construction and maintenance of a pipe line across the Isthmus for the purpose of conveying crude oil, and for the erection of pumping stations and storage tanks in the cities of Panama and Colon. The license granted by the Secretary of War is revokable at the will of the Government of the United States, and is conditioned upon the payment to the Treasury of the Canal Zone of the sum of \$500, United States currency, a month, beginning August 1, 1906, the fund thus created to be set aside for the support of the public schools of the Canal Zone. It is further stipulated in the grant that, if desired, the Isthmian Canal Commission or the Panama Railroad Company may purchase crude oil from the Union Oil Company at \$0.90 United States currency, a barrel. Some delay has been caused in the laying of the pipe by litigation begun by private property owners over whose land it was necessary to pass, but it is expected that the line will be completed and in operation by December 1, 1906.

SANITATION IN NEAR-BY COUNTRIES.

Probably the most difficult task confronting the sanitary authorities at present is preventing the introduction of diseases into the Canal Zone by means of Panama and Colon. The result of a trip made by the Director of Hospitals to Guayaquil, together with other advices received from Guayaquil relative to the yellow fever situation in that place, were such that a recommendation was submitted by the Governor that as the Government of Ecuador was apparently taking no steps to check the spread of yellow fever and the present necessities of canal construction require that Guayaquil and other southern ports be made as healthful as Panama, the Ecuadorian Government be communicated with with a view of having the Governor of the Canal Zone, together with a sanitary expert, visit Guayaquil and cooperate with the Ecuadorian Government in putting into effect a system of sanitation. The matter was taken up by the Secretary of State, and the Minister of Ecuador stated that his Government consented to the visit of the Governor and the Chief Sanitary Officer to Guayaquil, where they would be welcomed by the Ecuadorian authorities. The minister stated further that the perfect harmony prevailing between the two Governments would contribute to the effective support they would lend each other in the execution of a plan which was not only to their mutual advantage, but by which the entire world would unquestionably be benefited.

Up to the time I left the Canal Zone, however, it did not seem that the time had arrived when the trip would result in the benefit desired from it, especially in view of adverse comments upon it by certain newspapers in Guayaquil which seemed to reflect a local opposition to any suggestion or interference on the part of the United States in

what is considered there as purely a local matter. It is likely that it can be taken up with advantage at some time in the future.

The question of protecting the canal from the unsanitary condition existing in many of the near-by countries will increase in importance as time goes on, and it will be necessary ultimately either to enter into some arrangement by which the authorities on the Isthmus may be assured of the sufficiency of sanitary measures at near-by ports or to discontinue communication with many of them.

SANITATION OF BOCAS DEL TORO.

In February, 1906, it was reported that a case of yellow fever had occurred at Bocas del Toro in the Republic of Panama on the Atlantic coast. As there is constant communication between this town and the city of Colon by means of canoes, launches, and small sailing vessels which it is extremely difficult for any quarantine service to properly supervise, it was considered almost inevitable that should the fever gain any hold at Bocas del Toro it would be imported into Colon and the Canal Zone. Upon the urgent recommendation of the Chief Sanitary Officer the Government of Panama was requested to allow the Isthmian Canal Commission, for the protection of the Canal Zone, to undertake the necessary work of sanitation at Bocas del Toro, as had been done in the nearer cities of Panama and Colon. Acceding to this request the Government of Panama appointed a physician of the Health Department to the position of Health Officer at Bocas del Toro with powers equivalent to those of the health and quarantine officers of Panama and Colon, and the Isthmian Canal Commission, by resolution adopted at the twenty-first meeting of the Executive Committee, authorized the detail of this physician, together with two sanitary inspectors, for service at Bocas del Toro and the expenditure in the sanitation of that town of not more than \$500 gold per month. The work was inaugurated in the latter part of May and has followed the lines of similar work in Panama and Colon. Especial attention has been paid to the screening of all water containers in the town against mosquitoes. Dirt and garbage has been removed and dumped into the sea and the brush has been cleared in the neighborhood of all houses. The Government of Panama, on its own behalf, has undertaken extensive works of municipal improvements at Bocas del Toro, including the construction of a sea wall, the raising of the level of the town, and the installation of a sewer system. It is probable that upon the completion of the works, with the continued enforcement of regulations devised to prevent the breeding of mosquitoes, Bocas del Toro will cease to offer any menace to the public health of the neighboring ports.

SANTO TOMAS HOSPITAL.

As described in my last annual report, the Canal Commission approved an agreement made with the Republic of Panama authorizing expenditures from Commission funds for the improvement, repair, and equipment of Santo Tomas Hospital in the city of Panama. Under this agreement several new buildings have been constructed for the hospital, the old buildings have been repaired, and the hospital has been provided thruout with modern hospital furniture and equipment.

The \$55,000 authorized by the Commission to be expended in the construction and repair of the buildings of the hospital was found to be inadequate for this purpose, and the Commission authorized the expenditure of so much as may be necessary of the \$85,000, Panamanian silver, which was turned over by the Republic of Panama to the Canal Commission on account of the expenditures for the hospital made by the Commission. It is expected that the work of construction and repair can be completed with the expenditure of only a small part of this sum.

It will be remembered that the work in connection with the hospital was undertaken by the United States because of the relief which would be afforded the hospitals of the Canal Zone when the indigent sick of Panama, now cared for in Zone hospitals, under the agreement with Panama of December 3, 1904, could be cared for in a Panama institution.

Santo Tomas Hospital, when the work of enlargement and equipment is completed, will be a modern institution with capacity and facilities to meet the demands which will be made upon it. It will be a credit to the Republic of Panama and will at the same time be a source of economy for the Commission.

The insane and lepers of Panama will continue to be cared for in Zone institutions.

MUNICIPAL SANITATION.

The work of municipal sanitation in Panama and Colon and the Canal Zone has been prosecuted with the greatest energy during the past year. In Panama the paving of the city with vitrified brick, which was begun in October, 1905, is about 60 per cent completed. Approximately 50,000 square yards of paving have been laid, and 16,000 square yards, included in the original project, remains yet to be done. This has resulted not only in the marked improvement of the appearance of the city and in the greater comfort of every resident, but it has also greatly facilitated the work of the Sanitary Department and contributed toward the extermination of mosquitoes, which formerly found abundant breeding places in the pools which formed in the streets and along the roadside after each heavy rainfall.

The sewer system is practically completed, 55,840 feet of pipe having been laid, including 158 manholes and 157 storm-water inlets, and 1,469 curb connections have been made. The sewer has proved perfectly satisfactory in design, and the dry-weather flow has been in all cases sufficient to keep the inverts clean without the use of flush tanks, which it was originally thought might be necessary. The buildings at Ancon have been connected with the Panama sewer system by an extension consisting of 7,840 feet of pipe. The water system is complete with the exception of the curb connections, of which 1,305 have been made, and the remainder are being completed as rapidly as the available force will permit. The Ancon reservoir, having a capacity of 1,000,000 gallons, is now in operation. The Panama system is connected both with this reservoir and with the Rio Grande mains. This has already proved convenient when accidents to the main have temporarily cut off the supply and left the city dependent for the time being upon the 1,000,000 gallons stored in the reservoir at Ancon. A high-pressure system has been installed for Ancon

Hospital, which is at too great an elevation to use the Rio Grande supply. This system consists of a standpipe having a capacity of 50,000 gallons and two Duplex pumps, which raise water from the Ancon reservoir. It has been in operation since September 15.

The town of La Boca has been connected with the Rio Grande reservoir by a 6-inch main 13,881 feet in length, from which 31 house connections have been made. Work was commenced on the sewer system in February; 2,657 feet of pipe have been laid, 9 concrete manholes have been constructed, and 34 house connections have been made.

Corozal and Miraflores are supplied with water from the Rio Grande reservoir, and sewer systems have been installed with which all of the houses in either place are connected.

At Paraiso, 2,645 feet of sewer pipe have been laid, 4 manholes have been constructed, and all houses adjoining the sewer have been connected. The town is supplied with Rio Grande water, and water pipe has been laid for 1,194 feet and the adjoining houses connected.

For the town of Culebra a reservoir has been constructed on Mount Zion, having a capacity of 500,000 gallons, to which water is pumped from the Rio Grande supply; 7,400 feet of sewer have been laid and 84 house connections have been made. A macadamized road has been built at Culebra, leading from the railroad station to the offices of the Engineering Department, in addition to which one-half mile of cinder paths has been graded and completed.

The water supply of the towns of Haut Obispo and Bas Obispo is taken from a point in the hills above the town. A distilling plant is now in constant operation, furnishing distilled water for these places. At the marine camp at Haut Obispo a sewer system has recently been completed, and is in operation.

To provide a water supply for the town of Gorgona, a dam was built across the Rio Carabali impounding approximately 40,000,000 gallons of water at an elevation of 65 feet above sea level. From this storage basin the water is pumped to the concrete distributing reservoir 199 feet higher, having a capacity of about 279,000 gallons, and supplies Gorgona, Jamaica Town, and Matachin. The sewer system at Gorgona is now nearing completion.

An emergency water supply has been provided for in Colon by building a temporary reservoir connecting with an old French system. The water collected in this reservoir was sufficient to carry Colon thru the dry season until the 1st of April, when it became necessary to haul water into the town in tank cars from Frijoles, and 250,000 gallons were brought into the city in this manner, being distributed to the people at four different places. At no time during the past year has Colon or Cristobal suffered from lack of water, altho during the height of what was called the water famine there was not what would be considered an adequate supply for an American city. By the advent of the next rainy season a permanent reservoir will be completed and there will be no danger of even a partial or temporary shortage. On October 30 this reservoir contained 330,500,000 gallons of water. Over 35,000 feet of mains have been laid in Colon and 64 fire plugs installed. All the houses in Cristobal occupied by white employees have been connected with the water system, while in Colon street hydrants have been placed at intervals of 700 feet to supply the inhabitants with water until such time as house connections are made. A complete sewer system has

been designed for Colon, approved, and partially installed. On account of the low elevation of the town, a pumping system will be necessary, and the sewerage will finally reach the sea thru a force main 4,000 feet long, laid across Manzanillo Island. Sewer pipe for Colon began to arrive in the latter part of July, and work was begun immediately on Front street. Upon the completion of the sewer that street was paved in its entire length. The other streets of the city are being sewerized and paved as rapidly as possible. Sewers have already been laid in Cristobal.

The water derived from the various reservoirs in the Canal Zone is constantly tested and analyzed at the laboratory of the Board of Health. These tests have resulted universally in proving the good quality of the water, which compares favorably with any municipal supply in the United States. This is further apparent by the infrequency of typhoid fever, dysentery, and other water-borne diseases. For the further protection of the public health, sterilizing plants are in operation at Ancon, Culebra, Empire, Las Cascadas, Bas Obispo, and Gorgona, and estimates have been prepared for mechanical filtration plants to be installed in connection with the more important systems

OFFICE BUILDINGS.

The headquarters of the Zone government are at Ancon. The work of the Executive Office, however, is actually done in the Canal Administration Building in Panama, the building where the headquarters of the French Canal Company formerly were and where the Chief Engineer's Office was prior to the removal to Culebra. In the same building at present are the offices of the Collector of Revenues, the Prosecuting Attorney, the Chief of the Bureau of Municipalities, and the Water Commissioner of the Department of Government and Sanitation; the offices of the Division Engineers in charge of Municipal Engineering, Meteorology and River Hydraulics, and Map Making and Lithography, of the Department of Construction and Engineering, and the office of the Panama branch of the Division of Material and Supplies and of the Attorney for the Commission, both of the Department of Administration. The offices of the local Auditor and the Disbursing Officer were removed to Empire in October of this year.

The offices of the Chief Sanitary Officer, the Director of Hospitals, the Chief Quarantine Officer, and the Health Officer of Panama, all of the Health Department of the Department of Government and Sanitation, are in a rented building in the city of Panama.

The office of the Chief of Police of the Zone government is at Ancon, in the same building with the Supreme Court. The office of the Chief Sanitary Inspector of the Health Department is at Paraíso. At Cristobal are the offices of the Health Officer of Colon and Cristobal, the Deputy Collector of Revenues, and the Chief of the Fire Department.

The Commission has authorized the construction of a separate Administration Building for the offices of the Department of Government and Sanitation at Ancon. It is contemplated that there shall be space in this building for the Executive Office and the offices of the Chief Sanitary Officer, the Director of Hospitals, the Chief Quarantine Officer, the Chief Sanitary Inspector, the Health Officer of Panama, the Collector of Revenues, the Chief of Police, the Chief of

the Bureau of Municipalities, and the Water Commissioner. A court room for the Supreme Court and the Court of the First Judicial Circuit, together with the necessary offices for the justices and clerks, will also be provided. It is believed that considerable economy and increase in efficiency will be effected by bringing together, as far as possible, all the bureau and division offices of the Department of Government and Sanitation.

Pending the construction of the building at Ancon it is contemplated to remove the offices of the Chief Sanitary Officer, the Director of Hospitals, the Chief Quarantine Officer, the Chief Sanitary Inspector, and the Health Officer of Panama to the quarters in the Administration Building formerly occupied by the Disbursing Officer and the local Auditor.

At Cristobal authority has been given by the Commission for the construction of a general office building for the offices there of the Department of Government and Sanitation. It is contemplated that there shall be space in this building for a court room for the Court of the Third Judicial Circuit and offices for the judge and clerk, rooms for the Cristobal post-office, the Deputy Collector of Revenues, the Deputy Water Commissioner, the Assistant Quarantine Officer, and the Health Officer of Colon and Cristobal, thus bringing together at Cristobal all the offices of the Department of Government and Sanitation located there.

EXECUTIVE OFFICE.

The organization of the Executive Office was described in my last report. There have been no changes in it since then. The office is well organized and is doing effectively the work required of it.

During my absence, from January 21 to April 10 and since I left the Isthmus on September 25 of this year, additional duties, made necessary by my absence, have devolved upon the Executive Secretary under the following resolutions of the Commission:

Resolved, That the Head of the Department of Government and Sanitation of the Isthmian Canal Commission be authorized to direct that the Executive Secretary of the Canal Zone shall sign such correspondence and orders relating to the work of the Department of Government and Sanitation, including the Government of the Canal Zone, as the Head of the Department of Government and Sanitation may direct.

* * * * *

Resolved, That during the temporary absence or disability of the Head of the Department of Government and Sanitation, the Executive Secretary of the Canal Zone is authorized to approve for payment such pay rolls, vouchers, and public bills, and to approve such requisitions as the Head of the Department of Government and Sanitation is authorized or required to approve; such authorization to continue, unless otherwise directed by competent authority, so long as the temporary absence or disability may exist.

HEALTH DEPARTMENT.

The work of the Health Department of the Government of the Canal Zone is subdivided among four divisions: The Hospital Division, the Division of Sanitation, the Quarantine Division, and the Laboratory of the Board of Health. The total number of persons employed in the Department in the month of July, 1906, was 2,313, as compared with 2,290 in June, 1906, 2,341 in January, 1906, and 1,989 in July, 1905.

HOSPITAL DIVISION.

The hospital at Ancon has been enlarged during the past year by the construction of a large tuberculosis ward, an insane asylum, new quarters for both the internes and nurses employed at the hospital, and two sets of married quarters. All of these buildings are now practically completed, altho only the married quarters have as yet been fitted for occupancy. Several other buildings have been remodeled and repaired. Work has begun on two chapels and eight sets of married quarters to be connected with the hospital. The normal capacity of this hospital is now 465 beds and may be increased to 540 if it is ever necessary. In the month of January, during the dry season, which is the most healthful part of the year upon the Isthmus, 1,205 cases were treated at Ancon, while during the month of June, when the rainfall is usually heavy and the sick rate is highest, 1,820 cases were treated.

It is probable that during the coming year the hospital will be still further enlarged by the addition of a second story to some of the present wards, which will be in lieu of the construction of a third large hospital at some point upon the line of the canal intermediate between Ancon and Colon, as was originally intended.

Several additions have also been made during the year to the hospital at Colon, which now has a normal capacity of 384 beds, with an emergency capacity of 484. In the month of January 937 cases were treated at Colon, as compared with 1,210 cases in the month of June. At Colon Hospital two new hospital wards, a storehouse, and a stable and ambulance house have been completed since November 1, 1905. There are now in course of construction there buildings to be used as quarters by nurses, married employees, and attendants, and another ward building.

Besides the two large hospitals, at Ancon and Colon, six smaller hospitals and eight dispensaries are maintained at various points in the Canal Zone, so that cases of sickness can receive immediate attention wherever occurring. Hospital cars make two trips daily in either direction over the tracks of the Panama Railroad for the purpose of conveying the more serious cases from the dispensaries and line hospitals to the better equipped hospitals at Ancon and Colon. The normal capacity of these line hospitals is 274 beds, which may be increased in an emergency to 319.

The sanitarium at Taboga, constructed by the French and reopened by the Commission late in the fall of 1905, has proved a useful adjunct to the hospital division. Patients are sent to this sanitarium for recuperation as soon as they reach the convalescent stage, and in the cooler and more invigorating atmosphere of the island, aided by the healthful effect of sea bathing and physical exercise in the open air, their recovery is more rapid than it would be upon the mainland. The sanitarium has a normal capacity of 54 beds, with an emergency capacity of 72.

At Miraflores a hospital is maintained for the insane, lepers, and the indigent sick of Panama and the Canal Zone, with a normal capacity of 140 beds and an emergency capacity of 162 beds. Arrangements have been made and authority received for the establishment of a leper asylum at Palo Seco, in the Canal Zone, on the shore of Panama Bay, a few miles west of Panama. When the buildings for

this asylum are completed and the insane asylum and tuberculosis wards at Ancon Hospital are put in use, the buildings at Miraflores will be turned over to the Engineering Department for use as a camp for employees.

SANITATION.

Sanitary work is carried on under the supervision of the health officers of Panama and Colon and the Chief Sanitary Inspector, who has jurisdiction over this work in the Canal Zone proper.

The work of the Panama health office has been greatly simplified by the completion of the paving of the principal streets of the city and by the elimination of yellow fever. Its task is now confined to the collection of garbage, the periodical cleaning of houses and yards in the slums of the city, the cleaning of the streets, the medical inspection of the city, and the various measures necessary to prevent the breeding of mosquitoes. Fumigation, which was formerly the most important part of the work of this office, is continued systematically, altho on a small scale.

Sanitary work in Colon, on account of the local conditions, has been more difficult. The streets of that city are as yet unpaved, the drainage of the land, which is perfectly flat and only a few feet above the level of the sea, is imperfect, and the annual rainfall is almost twice as great as on the Pacific side of the Isthmus. It has consequently been very difficult to prevent the breeding of mosquitoes in Colon, while the condition of the streets and roads has greatly hampered the removal of garbage and night soil. Nevertheless, yellow fever has been eliminated, as in Panama, and some progress has been made toward converting the lowest, wettest, and dirtiest spot in the Republic of Panama, as it was a year ago, into a safe habitation for American employees.

Paving, the installation of water and sewer systems, and the construction of drainage canals, the most important work toward the permanent sanitary improvement of Colon, have been carried on under the immediate jurisdiction of the Engineering Department, altho some work has been done by the Health Department toward filling and guttering the streets.

SANITATION ON THE ZONE.

The chief aim of the sanitary work on the Zone, as in the cities, has been the destruction of mosquitoes and their breeding places. The work directed toward the extermination of the stegomyia is of comparatively less importance than in Panama and Colon, as this species of mosquito is a house dweller and is seldom found in the open country. Nevertheless, some fumigating work is done in the Zone towns, and houses and yards are carefully watched for the detection and destruction of breeding places.

The bulk of the work has had to do with the anopheles species, which breeds in pools, about the edges of slowly running streams, and in the damp tropical undergrowth. The anopheles brigade has cleared and keeps clear some two million square yards of ground in the Canal Zone. When it is remembered that the vegetation on the Isthmus during the rainy season will grow from three to six feet in a month, the difficulty of this task can be realized. In addition to this

the brigade has covered the Zone with a network of ditches for the drainage of swampy ground or in order to assist the rapid flow of rain water into the natural water courses. Some of these drainage ditches are lined with stones and the more permanent drains are concreted.

As it is impossible, in spite of the most strenuous efforts, to destroy all of the mosquitoes, it is necessary to provide means of protection against those that remain, and accordingly, in pursuance of the recommendation of the sanitary department, the quarters of all white employees have been screened, as well as a portion of the barracks occupied by laborers. The effect of screening is well illustrated by a comparison of the morbidity statistics among two shiploads of gallego laborers who came to the Isthmus within the last year. The first shipload arrived during the dry season, when mosquitoes were most scarce, and were quartered in unscreened buildings. Within six weeks of their arrival 33 per cent of these laborers had been taken sick with malaria. The second shipload arrived during the rainy season and were quartered in a camp not 200 yards distant from that of their predecessors. The buildings of the camp were screened. Sickness among the men was infrequent, and when they had been upon the Isthmus six weeks it was found that only 4 per cent had found their way to the hospitals.

QUARANTINE DIVISION.

The work of the quarantine division during the year has been, in the main, successful. Altho plague, yellow fever, and smallpox have been prevalent in the ports to the north and south of Panama, none of these diseases have gained a foothold in that city. The plague was introduced at La Boca in June and August of last year, but it was promptly stamped out by the effective measures described in detail in my last annual report. There has been no smallpox in Panama during the year and no yellow fever since November 11, 1905. Colon has been free from yellow fever since December 11, 1905, with the exception of a sporadic outbreak in May of this year, which was responsible for one case in Colon that resulted fatally; two cases were reported to have occurred on the steamship *Whitehall* in transit from Colon to Gulfport, Miss. There was an outbreak of smallpox at Colon, which began on July 9, 1906, and from which thirty-nine cases developed. The outbreak was at all times well under control. There were but two deaths, and the last case was reported as discharged on September 19.

BOARD OF HEALTH LABORATORY.

Important work has been carried on during the year under the direction of the Board of Health Laboratory, which was established for the purpose of analyzing food, water, drugs, and chemicals, and investigating bacteriological, chemical, toxocological, and pathological, medical, and sanitary problems, to which the physicians of the Health Department were not at liberty to devote special attention. An investigation has been conducted to determine the extent of malarial infection among the natives of the Isthmus, which showed that more than 70 per cent were infected; that the young were more susceptible than the middle-aged and the old, and that natives of Isthmus and their children were relatively less prone to malaria than

persons of foreign birth, altho of similar manner of life. Various chemical and bacteriological analyses have been made of the public water supplies, which have proved uniformly that the water drawn from reservoirs in the Canal Zone compares very favorably with municipal supplies in the United States. Exhaustive tests have been made of fumigating materials and methods, and a new culicide has been compounded, which has been found more effective than any similar preparation hitherto in use. The analysis of the stocks of liquor dealers in the Zone showed that in some instances the liquor sold by these persons was adulterated, and evidence was furnished the prosecuting attorney which resulted in the conviction of the offending dealers. At the present time, apart from its purely technical work, the laboratory is engaged on a series of agricultural investigations, with a view to improving the breed of dairy cattle upon the Isthmus and finding a suitable fodder which can be grown in this climate.

GENERAL RESULTS OF THE WORK OF THE HEALTH DEPARTMENT.

The great problem presented to the Health Department for solution two years ago was the elimination of yellow fever, which had been an important factor in the failure of the French Canal Company, and was one of the greatest obstacles confronting the American enterprise. In its campaign against this disease the department has been completely successful. Altho there has never been so great a number of nonimmunes upon the Isthmus as during the past year, there has not been a single case of yellow fever in Panama since November 11, 1905; and there were no cases in Colon from December 11, 1905, to May 17, 1906. On that date a single case occurred, which did not, however, result in the spread of the infection. This accomplishment alone affords ample proof of the efficiency of the department, but it has been equally successful in combating other diseases. The average daily sick rate among employees of the Commission during the six months from January 1, 1906, to June 30, 1906, was only 19.63 per 1,000. This rate is no higher than might be expected among an equal body of laborers engaged upon construction work in any part of the world; and as each day that a laborer is absent from his work on account of sickness represents a financial loss to the Commission, this low sick rate is of the greatest economic importance. Confidence in the efficiency of the Health Department, produced by these general conditions, is heightened by its universal success in stamping out such epidemic diseases as, in spite of quarantine and sanitary precautions, have gained a momentary foothold upon the Isthmus. In June and again in August of 1905 there occurred single cases of plague at La Boca. This disease is one of the most difficult to eradicate, but the energetic measures adopted by the Chief Sanitary Officer were completely successful and there has been no recurrence of the plague. In May of this present year there was a single case of yellow fever at Colon, following a period of several months during which that city had been free from infection. The case in question was doubtful, and, altho it was officially declared as yellow fever, the medical authorities were not clear that this diagnosis was correct. It was announced later, however, that the steamship *Whitehall*, which sailed from Colon for Gulfport,

Miss., on the 22d of May, the date of the death of the patient referred to above, arrived at the latter port with two cases of yellow fever on board, which were followed by a third case while the vessel was in quarantine. These facts, taken in conjunction, indicate that there must have been a considerable number of infected stegomyia mosquitoes in Colon at that time, but the measures adopted by the Colon health office effectively prevented any general outbreak of the disease. The suppression of the recent epidemic of smallpox at Colon affords additional evidence of the same character and adds one more achievement to the already brilliant record of this department. The reports of the Health Department, published monthly, cover in detail the work of the department.

DEPARTMENT OF REVENUES.

The Department of Revenues has charge of the Division of Customs, Division of Internal Revenue, Division of Posts, Division of Lands and Buildings, and Division of Administration of Estates.

The increase in the post-office receipts has kept pace with the increase in the general work. In October, 1904, the receipts were \$655.54 United States currency; in September, 1905, receipts amounted to \$1,775.79, and in June, 1906, \$4,320.13. These receipts were derived simply from the sale of postage, there being no lock boxes or other sources of miscellaneous receipts in any of the post-offices. It is intended as soon as equipment arrives to provide the offices with lock boxes and other conveniences which will tend to increase the revenues of the offices. The amount of gross receipts, however, does not indicate to any great extent the amount of mail handled, inasmuch as it is safe to say that 75 per cent of the mail is handled under franked envelopes for which, of course, the offices derive no revenue.

In 1905 the registry system was inaugurated, and some idea of the business done can be obtained from the statistical statement hereto attached showing the registry business in the Canal Zone from January 1, 1906, to June 30, 1906. This statement shows that there were registered a total of 33,491 letters and parcels. Of these, 24,565 were registered in five of the larger offices of the Canal Zone, and I attach hereto a statistical statement covering the work of those offices.

The money-order system in the Canal Zone was organized June 1, 1906. There had been for some months a crying demand from employees on the Isthmus for some means of sending money to their homes, there being no banking facilities other than in the cities of Panama and Colon. The entire population of the Canal Zone is essentially a wage-earning population, almost entirely persons who are living away from their own homes, and in a great many instances from their own families; the necessity for supplying some means of sending a portion of their salaries home was most evident, and the money-order system was established to meet this demand. During the month of June orders were issued only for payment in the United States, but during the month of July the system was extended to include British Guiana, Canada, Cuba, Newfoundland, the Philippine Islands, the islands of the West Indies, including Barbados, Grenada, Jamaica, and others, a total of about twelve of the West India Islands. The receipts so far have shown that there was at all times

a necessity for this department of the postal service. While the money-order system has not been inaugurated a sufficient length of time to determine absolutely to what extent it may grow, some idea of its necessity may be gained from the statistical statement hereto attached showing the number of orders issued during the month of June and the number issued during July, together with the amounts of the orders. In the month of June, \$53,316.94 worth of money orders were sold, and in July, \$103,903.49, making a total of 4,022 orders for a total amount of \$157,220.43. Of course, this is almost exclusively business with the United States, the consent of the West India Islands having been received only late in July. In August 4,659 orders were issued for the amount of \$128,252.16, and in September 4,466 orders issued for the sum of \$118,114.96. Attached hereto is a statement showing the money orders issued during June, July, August, and September, to the amount of \$394,835.52.

Equipped as the postal system is to-day, with experienced postal employees, modern conveniences and equipment, and a more settled condition of affairs on the Canal Zone, the very best possible results are being achieved. Mail is being handled promptly and efficiently and the postal system is rapidly becoming an almost self-sustaining institution of the Government.

LANDS.

The Division of Lands has charge of leasing lots and lands and such houses as are not necessary for the Building and Construction Department. At the time of the organization of the Land Department many houses had been leased to persons not connected with the canal work, and at one time there were in effect something over one thousand leases of this character, but most of these leases have been canceled for the purpose of turning the buildings over to the Engineering and Construction Department to be repaired and placed in condition for quartering employees and for other purposes. No attempt is being made to increase the number of leases of this character for the reason that all these buildings will eventually be required in the canal work.

Every possible facility, however, is being afforded persons desiring to lease lands for agricultural purposes, and there are, at the present time, 121 leases of agricultural lots of various sizes on the Canal Zone. The reports from these leases are extremely gratifying. It is possible to raise a large amount of garden stuff and the market is ever present wherever there are camps of canal employees. Sometimes it is necessary to clear off a large portion of these lands and there are many lessees who have not yet been able to raise a crop, but there is every evidence that within the next year there will be a large quantity of fresh vegetables and market garden supplies raised in the vicinity of the canal work.

CUSTOMS.

By proclamation of the President of the United States, dated June 24, 1904, the ports of Ancon and Cristobal were opened to the commerce of the world. This proclamation established two customs districts in the Canal Zone, and vessels have regularly entered and cleared since that date.

By order of the Governor of the Canal Zone, dated July 15, 1904, no duties, tolls, or any other fees have been charged for services rendered vessels entering and clearing from ports of the Canal Zone.

By Executive order of the President of December 3, 1904, no duties, tolls, or fees of any kind have been charged against the shipping of the Canal Zone and all duties on commercial cargoes not consigned to the Canal Commission, arriving at the ports of Ancon and Cristobal, have been collected by the Republic of Panama.

The ordinary services have been rendered vessels entering and clearing at the Canal Zone ports, such as boarding, entering and clearing, the filing of manifests, recording of protests, as well as the usual services to seamen as provided by law.

The customs authorities of the Canal Zone have protected the laws of the Republic of Panama against the immigration of Chinese, Syrians, and Turks into the Republic, and have taken proper precautions to provide against persons of this character arriving in transit, in conformity with the prohibited alien act of the Republic of Panama.

INTERNAL REVENUE.

Under the operations of sections 39, 40, and 41, of act 8 of the Isthmian Canal Commission, this department has jurisdiction in all matters pertaining to revenue collections, the issuance of distillery licenses, etc.

No law has been past by the Isthmian Canal Commission fixing the rates of taxes on distilled spirits, nor any rules or regulations prescribed for measurement or operation of the stills in the Canal Zone. The general instructions of the President to the Commission, thru the Secretary of War, dated May 9, 1904, wherein he directs that "the laws of the land with which the inhabitants are familiar which were in force on February 26, 1904, will continue in force in the Canal Zone and other places on the Isthmus over which the United States has jurisdiction until altered or amended by the said Commission," have been made applicable to the internal-revenue service of the Canal Zone, and the laws of the Republic of Panama have been followed in the administration of this service and in the collection of distillery taxes. During the past six months there were nine distilleries in active operation at certain periods, showing a total number of 850 days, and for that work the proper licenses required by law have been executed. For the year ending September 30, 1906, 111 licenses have been issued and one fine imposed, with a total collection of \$7,205.80

ADMINISTRATION OF ESTATES.

Pursuant to act 24 of the Isthmian Canal Commission, enacted March 1, 1905, providing for an inexpensive method of administration upon the estates of employees of the government of the Canal Zone or of the Isthmian Canal Commission, who are citizens of the United States and who die in the Canal Zone, the Collector of Revenues became ex officio Administrator of Estates, and up to and including the 30th day of June, 1906, has taken official action pertaining to the settlement of some 71 estates. Of this number 40 have been completely settled and the accounts as administrator closed, and final

settlements have been forwarded to the local auditor. The remaining estates are in process of adjustment, time being necessary to receive the proofs of heirship and other forms provided by law. No administration fees are charged and there is little or no expense attached to the administration of the estate or securing and packing and shipping to the relatives and heirs at law in the United States the effects and moneys due. By reason of the law governing the administration of estates, what might be excessive cost in the public administration is in each case avoided.

OFFICE OF THE WATER COMMISSIONER.

In the office of the Water Commissioner there have been prepared during the last year regulations to govern the sanitary installation of plumbing in the cities of Panama and Colon, and regulations establishing rates for the use of the water and sewer systems of either of those cities, and prescribing a method of their collection. The rates established were devised to cover the cost of the maintenance and operation of the water systems and sewer mains, and recover the cost of their installation, with interest, within a period of fifty years, as provided in the treaty with Panama. It was estimated that this object could be attained by establishing in the city of Panama a minimum water rate of \$4 silver a quarter, entitling a consumer to the use of 10,000 gallons of water during that period, and a rate of 40 cents silver per 1,000 gallons for water in excess of that amount, with a discount of 10 cents silver per 1,000 gallons if paid within fifteen days after date due. In Colon it was necessary to establish a minimum rate of \$9 silver a quarter, entitling the consumer to the use of 10,000 gallons, and a rate of 90 cents silver for each 1,000 gallons if paid within fifteen days after date due.

The rate in the city of Panama became effective with the quarter ending June 30, 1906. As meters had not yet been installed in the city, with one exception, consumers were charged the minimum rate of \$4 silver. Of 432 consumers 410 took advantage of the discount offered for paying their rents by July 15, 1906, and the remaining 22 settled their accounts within the period of forty-five days allowed by the regulations. There have been 241 house connections made since May 1, 1906, making a total of 673 connections to the water mains up to this date. Out of this number 635 will pay water rent for the quarter ending September 30, 1906. The balance of 38 connections were made within the last month, upon which meters are now installed and rents will be collected at the end of the next quarter. There are still 159 applications and contracts reported in the office of the Water Commissioner, which, when acted upon, will increase the total number of connections to 832. It is estimated by the Water Commissioner that there will eventually be 1,000 connections, and that these consumers, together with the hydrants and public fountains, will consume 1,000,000 gallons of water daily, which, when properly metered, will produce an income of \$54,000 gold per annum. The work of installing water meters in the city of Panama is being pushed by the Division of Municipal Engineering. There have been installed to date 103 meters. January 1, 1907, should see every private connection in the city of Panama with a

meter installed and one large meter to measure the entire consumption of the city. In the city of Colon connections have been allowed only for houses and buildings that have sewer facilities and where water is used for mechanical purposes. As soon as the installation of the sewer system has progressed sufficiently to dispose of the sewage, house connections will be allowed. Water is now supplied the residents for domestic use from hydrants on the street corners for which no charge has been made.

FIRE DEPARTMENT.

Fire department plans have been made for the organization of paid departments at Cristobal and Ancon. The Cristobal department will be composed of 13 men, as follows: One captain, 1 lieutenant, 1 electrician, 1 engineer, 6 firemen, 1 chief, 1 assistant chief, and 1 clerk. Eight of the above men are now on the Isthmus and have reported for duty, while others are en route from the States. The equipment of the Cristobal department is as follows: One hose wagon, 1 chemical engine, 1 hook and ladder, and 1 steam engine. This apparatus is first-class in every respect and should give excellent service. Nine horses have also been received from the States and have been put into service. Requisition has been made for a 10-box fire-alarm system for Cristobal and vicinity, which includes, besides Cristobal, the Mount Hope warehouse, and in Colon the docks, offices, and warehouses of the Panama Railroad Company, the Washington Hotel, and the hospital buildings. The Cristobal engine house is modern in all respects, and is provided with a dormitory for the men, so that they will be ready to respond to fire alarms at all hours.

Requisition has been made for equipment for the Ancon fire department, which is to be supplied with a combination hose wagon and chemical engine. The personnel of this department will consist of 4 paid men, as follows: One captain, 1 lieutenant, and 2 firemen. Plans for the Ancon engine house have been approved, and it should be ready for occupation as soon as the apparatus arrives from the States. This place will be connected with the local telephone system, so that the hospitals and other places can be in communication with the fire department, the place not being large enough to warrant the installation of a box-alarm system.

Fifteen volunteer companies, with a membership of 20 members each, have been organized, as follows: Cristobal, 2 companies; Gorgona, 2 companies; Empire, 2 companies; Culebra, 2 companies; Ancon, 2 companies; La Boca, 2 companies; Paraiso, 1 company; Pedro Miguel, 1 company; Miraflores, 1 company.

Each company is equipped with a hose reel, carrying 600 feet of 2½-inch hose, also with the necessary nozzles, pickaxes, etc.

At Cristobal and Ancon the volunteer departments are to act as auxiliaries to the paid departments, and are to be called out only in case of emergency.

At Gorgona, Empire, Culebra, and La Boca a paid fireman will have charge of each station. It will be the duty of this man to keep the apparatus in order and inspect buildings to see that no inflammable matter is allowed to accumulate. At fires he will have charge of the entire volunteer department. Volunteer firemen will be paid \$1 for each alarm responded to and \$1 for each additional hour of service.

Houses for the volunteer departments have been completed at Gorgona, La Boca, and Pedro Miguel, and at the other places they are in course of construction. The houses at Gorgona, Empire, Culebra, and La Boca are provided with quarters for the paid firemen to be stationed at these places. The houses at Culebra and Empire are being made large enough to accommodate a small paid department, which, from present indications, will be needed at these places in the near future. Until the time comes for such a change, the extra space will be used by the volunteers as a meeting place and social hall.

Five hundred and forty-seven 3-gallon fire extinguishers have been charged and distributed. The absence of other fire protection has made it necessary, until recently, to rely almost entirely upon the chemical extinguishers, and they have proved their efficiency on a number of occasions by averting what threatened to become bad fires.

The Culebra and Corozal hotels, the Taboga Sanitarium and the commissary warehouse at Cristobal, owing to the special risks involved in buildings of this nature, have been provided with standpipes and fire hose. Mechanics are now equipping Santo Tomas Hospital in Panama City with standpipes for fire hose; the water mains are also being extended, and when this work is completed the hospital will have adequate fire protection.

Frequent tours of inspection have been made to see that the chemical fire extinguishers are in service, and that other fire apparatus is not tampered with. It has also been found necessary to make frequent trips to see that the buildings in course of construction are kept free from inflammable material, and to prevent its accumulation at other places; as well as to ascertain what fire protection will be required by buildings in the course of construction.

The records of the department show that there have been twenty-four fires during the last seven months; these were all discovered in their incipiency, so that the total loss is not over a few thousand dollars. This past good fortune can not be expected to continue in the future, but the organization of the fire department is now so nearly completed that it is prepared to cope with ordinary exigencies, and it is hoped that with the approach of the dry season it will be in a position to handle any fire which is at all likely to occur.

MUNICIPALITIES.

During the eleven months ended September 30, 1906, the municipalities of the Canal Zone have shown exceedingly gratifying progress; a great amount of public work has been accomplished, the condition of the finances has been improved, and respect and admiration of the inhabitants for the method of administration and government has grown. There has become apparent among the natives of the Canal Zone an intelligent interest in the public affairs of the municipalities, and satisfaction is express that the taxes collected from residents of the Zone are now devoted to improvements within the municipalities and not, as under the Colombian régime, to the maintenance of a government several hundred miles away.

Included in the public works accomplished are the construction of slaughterhouses, market houses, schoolhouses, municipal buildings

and jails for municipal prisoners, the creation of parks, the installation of street lamps and the construction of sidewalks in the principal towns, and the construction of roads and the opening of trails in all the municipalities. The cost of all the work of improvement has been borne by the municipalities, and there remains an unexpended balance of over \$150,000 Panamanian silver to the credit of the various municipalities in the hands of the Treasurer of the Government of the Canal Zone.

To illustrate the character of the public works undertaken, and their results, it may be stated that all the available space in the public market recently completed at Empire, at a cost of \$4,500 Panamanian silver, was rented at once, and applications for as much more space caused the building to be made as large again, a work just completed, and the whole of this extra room is now taken up. The net monthly rental from the market amounts to \$400 silver, which is equivalent to a net revenue to the municipality of 50 per cent per annum on the cost of construction. New public markets are under construction in two other municipalities, and a third has plans prepared and material ordered for this purpose.

The opening of municipal slaughterhouses in the larger towns has met with success, and they have been a source of revenue to the municipalities in which they are being operated. For example, the slaughterhouse at Empire, opened to the public on November 1, 1905, during the first month of its operation gave to the municipality a net revenue amounting to 75 per cent per annum on its cost (\$1,285 silver), and since the opening of public roads and trails thruout the municipality this revenue has been largely increased and the plant has had to be increased by a 50 per cent addition. The benefits to the public resulting from the municipal operation of public slaughterhouses include a greater degree of cleanliness, as the new buildings are furnished with running water and proper drainage, and, as it is provided by municipal ordinance that all animals killed within the municipality shall be slaughtered at municipal abattoirs, it is possible for the Health Department of the Zone to prevent the slaughtering, for sale and consumption, of diseased animals.

Practically all the material used by the municipalities in construction work has been purchased from merchants in Panama and Colon, and where any has been secured from the Commission's stock the municipalities have paid the invoice cost to the Commission, plus a percentage for handling and administrative expense.

The first park in the Canal Zone was opened to the public at Gorgona during the present year. It is situated on the banks of the Chagres River.

Much energy is being manifested by the municipalities in the construction of roads and trails, and the work is being carried forward as rapidly as the present rainy season will permit. It is hoped by the end of the next dry season (April, 1907) to have a continuous road, suitable for wheeled traffic, open from the city of Panama to Gorgona, a distance of 19 miles. The opening of roads and traffic has so far resulted in diverting a large amount of foot travel from the right of way of the railroad, which hitherto has been the only means of communication between the various towns and villages. The roads and trails have also been the means of increasing the num-

ber of cattle and amount of agricultural products offered for sale in the public markets of the municipalities. For example, the number of cattle slaughtered at Empire (the municipality in which the greatest amount of road work has been done) has increased in the past eight months from a daily average of two to twelve.

The construction of sidewalks and the installation of street lamps in the principal towns is progressing, and it is proposed to greatly extend this work during the present year. Thirteen towns in the different municipalities have been provided with street lamps.

In addition to the construction of roads the municipalities have devoted much attention to the improvement of streets. In the town of Empire the main street is being macadamized. It is proposed to grade and gutter all streets in the towns of Empire and Gorgona as soon as possible.

Among the ordinances enacted by the municipalities during the past eight months is one providing for the compulsory attendance at public schools of all children between the ages of 6 and 12 years. The immediate result of this ordinance was that during the month of June the attendance at schools having the necessary accommodations was increased from 20 to 40 per cent of the school population.

The municipalities have title to considerable land and a number of buildings within their limits. All buildings, the property of the municipalities, not actually needed by them, for which there was a demand, have been repaired and rented, in some instances to private individuals, but frequently to the Government of the Canal Zone, for such purposes as post-offices and police stations. Where it has been possible to do so, land that has not been necessary for municipal purposes has also been rented. During the nine months ended September 30, 1906, the income derived from rentals by the municipalities amounted to \$12,666.23 silver.

Due to the growing surplus on hand in all municipalities, it was deemed expedient, in November, 1905, to make licenses granted merchants a fixed amount instead of a percentage on the valuation of the stocks carried. A uniform ordinance was accordingly enacted by all the municipalities and approved by the Governor.

During the nine months ended September 30, 1906, the revenues of the five municipalities amounted to \$189,769.44 Panamanian silver, as against \$90,614.77 during the same period of 1905. The disbursements during the nine months ended September 30, 1906, amounted to \$116,456.74 silver (including \$63,075.85 for public works), as against \$34,695.42 for the same period of 1905, of which but \$3,100.45 was devoted to public works. On September 30, 1906, there was a cash balance to the credit of the municipalities of \$145,291.29 silver, as against \$61,954.01 on September 30, 1905.

SCHOOLS.

Altho the establishment of a school system had been authorized by the Isthmian Canal Commission in 1904, little had been done until December, 1905, toward its organization. A census of the children of school age in the Canal Zone had been taken, some equipment from the United States had been ordered, and some of the buildings of the Isthmian Canal Commission and the Government of the Canal Zone

set aside for school purposes had been repaired. Seven schools had, however, been maintained by the municipalities of the Zone. In December, 1905, a Superintendent of Schools, with experience in the direction and management of village and country schools in the West, was appointed for the Canal Zone, and preliminary steps were taken toward the opening of free schools. On January 2, 1906, the first free public school under the Canal Zone Government was opened at Corozal. Owing to the delay in the receipt of equipment ordered from the United States, it was provided only with a few borrowed chairs and tables, and such books as had been sent to the school authorities as samples, supplemented by a few that were found in the homes at Corozal. Other schools were soon opened at other points in the Canal Zone. There were, accordingly, two sets of public schools in the Zone—those conducted by the municipalities and those established by the Canal Zone Government—the two systems being conducted independently of each other. On the 1st of February, however, the schools maintained by the municipalities were made a part of the school system conducted by the Government of the Canal Zone. Because of the necessity for more personal supervision than it was possible for the Collector of Revenues with the many duties connected with the several divisions under his direction to give, and because the maintenance of the schools was more intimately related with the organization and work of the municipalities, the supervision of the schools was transferred to the Chief of the Bureau of Municipalities when that bureau was created on May 1, 1906. As action by the different municipalities was less hampered by the rules of Government methods, this made possible a greater activity and overcame in a large measure the disappointments and delays which had previously obstructed the work. Where suitable buildings were not owned by the Government, they were rented, others were repaired, and some were built, material and labor, where obtainable, being secured at the expense of the municipality where the school would be located. In this way good progress has been made in the organization of schools during the last three months covered by this report.

At the time the transfer of the schools was made, May 1, 1906, there were in operation on the Zone 18 schools, employing 21 teachers, with an enrollment of 840 pupils, and an average attendance of 611. On the 1st of June the number was increased to 22 schools, with an enrollment of 1,088 and an average attendance of 738. On June 1 the municipalities put into force local ordinances making school attendance compulsory, which have proved very effective in increasing the attendance. On the 30th of June there were 27 schools open, with an enrollment of 1,470 pupils, and an average daily attendance of 1,057. The first half of July was vacation period, but on the 16th of that month the schools were reopened under a reorganized system, and on September 30 the term ended with 30 schools, 1,796 pupils enrolled and an average daily attendance of 1,237. Plans have been made for the construction of at least six more school buildings and the rental of two others, which will accommodate together from 700 to 800 more pupils, and it is hoped that by the 1st of January, 1907, there will be in the neighborhood of 2,500 children attending Canal Zone schools, which will then be about the full number of school age to be got at. Additional supplies have been ordered from the

United States, and the additional teachers required will, if possible, be secured there.

Of the 34 teachers employed on September 30, 14 were American, 1 Panamanian, and 19 Jamaican (colored). Of the 30 schools, 4 were for white children only, and the others mixt, with a large majority of the children negroes. Out of the 1,800 children then enrolled, about 10 per cent only were American and white.

On March 3 the first convention of Zone teachers was held at Ancon. There were 16 teachers present, with many Panamanian and Zone officials as visitors. Other conventions have subsequently been held, with increased attendance.

The public school system on the Zone is essentially American, with many American teachers, American methods, American text-books, American songs and literature are used, and the American flag, floating over every schoolhouse on the Zone, should promote a growth of American ideas and American patriotism among the growing population. The opening of the schools has, on the whole, been welcomed by the people on the Isthmus regardless of nationality or class.

It should be remarked in this connection that no expense connected with public education on the Zone has fallen on the appropriation for the construction of the canal. Up to this time all expenses have been paid from funds of the Canal Zone and of the different municipalities, and it is believed that the cost of maintenance as well as the initial cost of organization can be borne from the Canal Zone and municipal funds without calling upon the funds appropriated for the construction of the Canal.

Twelve months since there were but 5 schools on the Zone, and these without organization or system, with an attendance of less than 150 school children, and a census then taken gave 1,936 as the number of children of school age on the entire strip, one-half of whom could neither read nor write.

JUDICIARY.

The number of cases tried in the courts has increased during the last year. The tables appended hereto will indicate the number and nature of the cases. The judicial system is working admirably and is well adapted to the needs of the Zone.

LEGAL DEPARTMENT.

The Legal Department of the Canal Zone was created by act No. 8 of the Isthmian Canal Commission.

The department is charged with all litigation before the courts of special tribunals of the Zone, and advises the Governor and the Commission respecting questions of law arising in the administration of affairs subject to their jurisdiction. It also presents the interests of the Government of the United States in the courts of Panama.

The department was also charged with the duty of negotiating for the purchase of real estate required for canal construction purposes. Most of these negotiations have been concluded without the necessity of referring to the Joint Commission provided for in the treaty with Panama. There were three cases which could not be adjusted on a

reasonable basis, and it therefore became necessary to acquire the property by expropriation. The law enacted by the Commission whereby property may be acquired in conformity with articles 6 and 15 of the treaty between the United States and Panama has been tested and proved very satisfactory; all questions relating to the value of land, at the time of the signing of the treaty, in the vicinity of the property sought to be expropriated, and all other questions relating thereto, may be brought to the attention of the Joint Commission without following the laws in force in the Republic of Panama or the Canal Zone, which are quite cumbersome.

Many cases of damages caused by the Municipal Engineers and the Department of Health, while in the execution of the work of construction and sanitation, have been referred to this department for settlement. In every instance except one an adjustment was successfully concluded. Upon investigation of the rejected claim it was determined that the property upon which the alleged damage was done did not belong to the claimant, and a judicial decision was obtained restoring the land to the Panama Railroad Company, the lawful owner.

Various persons, claiming ownership to land along the route of the canal and railroad, having objected to the engineering corps entering thereon, an investigation into their titles disclosed the fact that no claim to ownership could be established further than a possessory right, and in many cases the possession is according to the law "possession in bad faith." These disclosures led to a general investigation of all titles from Colon to Gorgona. This investigation has been in progress for the last year, and with the valuable assistance rendered by the Legal Advisor in the Spanish law it has been ascertained that all the land belongs either to the Government of the United States, by purchase from the French Canal Company, or to the Government of the United States as public lands, or to the Panama Railroad Company, according to article No. 9 of the agreement between the Government of Colombia and the Panama Railroad Company, dated April 15, 1850; and that those claiming ownership by purchase or occupation can not under the law establish title thereto, except such rights as the squatters had from whom the land was originally purchased since the construction of the Panama Railroad. All this information, together with the law covering the questions involved, was submitted to the General Counsel for the Isthmian Canal Commission on his recent visit to the Isthmus.

This department has charge of the work of criminal prosecutions on the Zone. On August 16, 1904, a penal code was enacted by the Commission and immediately put in force; a few days thereafter the Commission adopted a code of criminal procedure entirely different from that used in the Republic of Panama. It was, indeed, surprising how readily the natives adapted themselves to the new laws. It was the invariable rule not to ask for the exclusion of witnesses from the court room, as it was desired to have as many natives as possible hear the trials and become acquainted with the proceedings in order to inspire confidence in the courts and assure the people that violations of the law will be speedily tried and punished.

The Canal Zone is practically free from crime. During the existence of the courts the dockets show but 249 criminal cases, and of that number 211 resulted in convictions.

Special laws were enacted by the Commission on August 22, 1904, for the suppression of gambling and the selling of lottery tickets on the Zone. Under these laws there were seven arrests for bringing lottery tickets into the Zone for the purpose of sale. These cases were tried before the Circuit Court, and convictions were had. An appeal was taken to the Supreme Court, and on the day set for argument the appellant withdrew the appeals.

Under the gambling law there was one arrest and conviction; an appeal to the Supreme Court upheld the law and sustained the sentence of the lower court in so far as the fine was concerned, but modified the sentence, relieving the defendant of the confinement in jail.

Great care has been manifested as regards the expenditure of public funds both in summoning of witnesses and in permitting those charged with crime to remain in jail at the public expense awaiting trial; it has been the rule to bring to trial immediately all offenders against the law, and especially those confined in jail.

This department has been in charge of the work of the Panama Railroad Company to the extent of defending suits brought against it in the circuit courts and settling claims for personal injuries.

By resolution adopted September 6, 1906, the Legal Department of the Commission and the Zone Government, in conjunction with the Legal Department of the Panama Railroad Company, was reorganized as follows:

General Counsel of the Isthmian Canal Commission, who shall also be Associate Counsel upon the Isthmus of the Panama Railroad Company, in charge of all legal affairs of the Canal Commission, both in the United States and on the Isthmus, and of the affairs of the Panama Railroad Company upon the Isthmus.

Attorney on the Isthmus of the Isthmian Canal Commission, in charge of the legal interests upon the Isthmus of the Canal Commission, and of the Railroad Company, appointed by the General Counsel subject to the approval of the Chairman of the Commission, and acting under the direction of the General Counsel.

Legal Adviser of the Isthmian Canal Commission, assisting the attorney on the Isthmus for the Commission and the Panama Railroad Company and the Canal Zone Government in all matters requiring his assistance, appointed by the General Counsel, subject to the approval of the Chairman of the Commission, and acting under the direction of the General Counsel.

Prosecuting Attorney of the Government of the Canal Zone, in charge of the enforcement of the Penal Laws of the Canal Zone, appointed by the Governor, but acting in conjunction with the Civil Legal Department of the Commission where required.

POLICE DEPARTMENT.

Under an order issued on January 12, 1906, the authorized strength of the police force of the Government of the Canal Zone was 241 officers and 7 clerks. On September 30, 1906, it had been found necessary to increase the force to a total of 300 police officers and 7 clerks. The pay rolls for the month of September, 1906, for the entire Police Department amounted to \$13,527.43, as against \$7,374.46 for September, 1905. The total pay rolls for the department for the fiscal year ended September 30, 1906, amounted to \$135,921.52.

The total number of arrests during the year ended September 30, 1906, was 4,264, an average of about 355 per month, in a population of about 22,137. While this is an increase in the actual number of arrests over that for the twelve months ended September 30, 1905, the proportion of arrests to population is lower than at any time since the work of construction was undertaken by the Government of the United States. The total number of convictions was 3,574.

The most frequent cause of arrest during the year was the violation of sanitary regulations, for which 584 persons were taken into custody. This is attributed to two causes: (1) the ignorance of sanitary rules among the new arrivals on the Isthmus, of whom there has been a large number during the year, and (2) to the more rigid enforcement of sanitary regulations. There has been a large decrease in the number of arrests for drunkenness and disorderly conduct. During the year ended September 30, 1905, there were 550 persons taken into custody for these causes, while, during the year ended September 30, 1906, in a much larger population, there were 526 arrests.

Since November 1, 1905, three jails, under construction at that time, have been completed and are now occupied by the department, and four jails are at present in course of construction. The erection of nine additional jails at various points in the Zone has been authorized by the Commission, but it has not been possible for the Building Department to commence their construction. The total estimated amount expended during the year ending September 30, 1906, for the construction and repair of jails and police stations was, approximately, \$15,000. Owing to the delay in the completion of the buildings authorized, it is necessary for the Police Department to utilize for jails and stations old buildings intended for other purposes and remodeled for temporary occupancy. It is hoped that during the present fiscal year all the jails that have been authorized will be completed, and that the Police Department will be provided with suitable accommodations.

As yet it has not been possible to construct the necessary buildings for a penitentiary. In March, 1906, the Zone prisoners, who until that time had been confined in the jail at Empire, were transferred to the recently completed and more commodious jail at Culebra, where better provisions could be made for their care. They have been employed in the work of building roads, breaking stone, etc. Owing to the fact that most of this work is done in conjunction with laborers employed by the municipalities and the Commission, it has not been possible to ascertain the exact value of their labor, but it is believed that the prisoners have been nearly self-supporting. Sixty convicts have begun penitentiary sentences during the year ended September 30, 1906.

It has not yet been found possible to install a telephone system connecting the various police stations of the Zone, but the need of an adequate system has become more apparent as the population has increased.

The relations between the Zone Police Department and the Police Department of the Republic of Panama have been very friendly and they have continued to cooperate in apprehending criminals.

In the discharge of his duties as Marshal of the Supreme and Circuit courts of the Canal Zone the Chief of Police reports that there have been 198 summonses and 1,415 subpoenas served.

The Chief of Police, acting as Coroner, has during the year held inquests over 66 bodies.

An effort has been made to set out briefly the progress made and the results accomplished since the date of my last report. There is of course much of interest and importance that can not be included in this report for want of space. Gratifying efficiency has been developed thruout the organization. Work has been systematized and largely reduced to routine, making it possible in many cases to reduce the force. Great credit is due to the officers and employees of the department for their faithful and intelligent efforts and for the unselfish cooperation in the work which they have at all times manifested.

CHARLES E. MAGOON,
*Head of the Department of Government and Sanitation
and Governor of the Canal Zone.*

The CHAIRMAN Isthmian CANAL COMMISSION.

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APPENDIX 1.—STATISTICS—REVENUES AND DISBURSEMENTS.

TABLE 1.—Statement of the revenues of the Government of the Canal Zone to October 31, 1906.

	Total.	Postal revenues.	Distilling licenses.	Revenues, stamps, and stamp paper.	Miscellaneous taxes and license.	Police fines.	Court fees and fines.	Miscellaneous.
To Oct. 31, 1905.	\$30,242.42	\$17,642.37	\$7,439.93	\$284.41	\$4,142.90	\$309.68	\$899.08	\$19.40
November, 1905.	2,445.18	1,624.34	422.25	3.20	20.00	119.14	208.50	5.00
December, 1905.	3,000.14	2,110.84	760.65	14.10	28.80	10.00	15.75	46.00
January, 1906.	3,384.73	2,476.67	602.70	8.40	10.00	53.56	164.95	22.00
February, 1906.	4,641.98	2,359.31	644.40	5.90	20.00	18.67	1,069.90	383.00
March, 1906.	4,543.88	3,110.08	664.30	.....	20.00	57.00	65.15	376.00
April, 1906.	4,918.12	4,027.52	657.20	.....	30.00	124.00	2.40	77.00
May, 1906.	4,381.74	3,179.06	808.00	.....	15.00	34.00	323.68	22.00
June, 1906.	4,747.55	3,412.55	511.10	.....	55.00	60.00	624.90	84.00
July, 1906.	5,035.16	4,417.06	394.80	.....	45.00	32.00	101.30	45.00
August, 1906.	3,593.68	2,174.98	518.10	.....	69.00	187.60	659.90	644.00
September, 1906.	4,866.10	2,644.70	763.50	.....	20.00	659.90	578.00	.....
October, 1906.	4,654.27	2,128.72	610.90	.....	50.00	210.65	654.00	.....
Total to Oct. 31, 1906.	80,254.95	52,308.20	14,797.83	316.01	4,386.70	957.05	4,533.76	2,955.40
Corrections and refunds of erroneous collections:								
Refund of part of fine imposed on steamship Los.	.....	.....	.....	.....	.....	.....	.....	250.00
Paid Isthmian Canal Commission for cost of Panama stamps sold to July 31, 1906	15,887.42	.....	.....	.....	.....	.....	.....	.....
Total repayments.	16,137.42	15,887.42	.....	.....	.....	.....	.....	250.00
Total revenue.	64,117.53	36,420.78	14,797.83	316.01	4,386.70	957.05	4,533.76	2,705.40

a Excludes original cost of stamps.

NOTE.—From the above revenues there has been appropriated \$1,500 for contingent expenses of Canal Zone Government and \$90,000 for maintenance of schools.

TABLE 2.—Statement of appropriation for school purposes from July, 1905, to October, 1906, inclusive.

July, 1905.	By appropriation for educational purposes, 1905	.....	\$30,000.00
Sept., 1906.	By appropriation for educational purposes, 1906.	.....	50,000.00
	By repayment to appropriation.	.....	5.99
July, 1906.	Salaries from July, 1905, to May, 1906	.....	\$6,926.43
	Material and supplies, July, 1905, to May, 1906	.....	4,438.01
	Salaries, June 1 to 30	.....	1,640.84
	Salaries, June 16 to 30	.....	95.00
Aug., 1906.	Material and supplies, voucher No. Z-7216	.....	3,524.29
	Salaries, June 1 to 30	.....	108.17
	Salaries, July 1 to 31	.....	993.33
Sept., 1906.	Material and supplies, voucher No. Z-8128	.....	708.90
	Material and supplies, voucher No. 9074-Z	.....	340.31
	Traveling expenses, L. F. Solorzana	.....	6.45
	Traveling expenses, A. B. Kinnenfauch	.....	6.50
	Traveling expenses, O'Connor	.....	9.00
	Traveling expenses, F. F. B. Davis	.....	5.00
	Traveling expenses, F. F. B. Davis	.....	5.00
	Salaries, August 1 to 31	.....	2,003.33

Sept., 1906. Salaries, August	\$65.00
Salaries, July 1 to 31	32.50
Oct., 1906. Salaries, September	1,987.16
Balance	57,110.77
	<hr/>
	80,005.99
	\$80,005.99

NOTE.—No charges have so far been made against this appropriation for construction and repairs of schoolhouses.

TABLE 3.—*Statement of appropriation for contingent expenses from July, 1905, to October, 1906, inclusive.*

July, 1905. By amount appropriated	\$500.00
Sept., 1906. By amount appropriated	1,000.00
Aug., 1905. Voucher 1796, W. W. McNeil, acting as special judge	\$10.00
Voucher 1797, Rudolph Ayarza, acting as special judge	10.00
Voucher 71496, O. Kyle, witness fees, etc.	3.00
Sept., 1905. Voucher 8012, premium bond G. C. Shafer, Treasurer, Canal Zone	25.00
Oct., 1905. Voucher —, J. T. Anderson, injuries to horse	21.67
Dec., 1905. Voucher Z-11487, J. Forbes, reimbursement for amount stolen at Ancon Hospital	41.30
Jan., 1906. Voucher Z-12359, R. Neira, acting circuit judge	10.00
Voucher Z-12300, E. J. Williams, premium bond, Treasurer Canal Zone	45.00
Voucher Z-12361, A. M. Burtt, acting circuit judge	10.00
Aug., 1906. E. J. Williams, premium bond, Treasurer, Canal Zone	135.00
Balance	1,189.03
	<hr/>
	1,500.00
	1,500.00
Oct. 31, 1906. By balance	1,189.03

APPENDIX 2.—STATISTICS—CONSOLIDATED REPORT OF FORCE.

TABLE 4.—*Department of Government and Sanitation—Consolidated Report of Force October 1, 1905, to September 30, 1906.*

Date.	Gold, monthly.	Gold, hourly.	Silver, monthly.	Silver, hourly.	Total number employed.	Total salaries and wages.
1905.						
October	637	—	551	1,625	2,812	\$100,973.57
November	614	—	490	1,114	2,218	101,291.73
December	619	1	532	1,048	2,200	106,729.95
1906.						
January	658	1	573	1,317	2,549	114,024.62
February	674	1	593	1,328	2,596	115,785.85
March	674	1	608	1,364	2,647	117,697.54
April	689	2	610	1,322	2,623	118,693.07
May	675	3	610	1,252	2,540	120,834.91
June	692	2	661	1,189	2,544	118,120.01
July	728	2	727	1,273	2,730	124,606.34
August	741	4	774	1,348	2,867	132,657.68
September	760	3	751	1,296	2,810	129,856.43
Total	—	—	—	—	—	1,401,271.70

TABLE 5.—Executive Office—Consolidated Report of Force October 1, 1905, to September 30, 1906.

Month.	Gold, monthly.	Silver, monthly.	Silver, hourly.	Total employees.	Total sala- ries and wages.
1905.					
October.....	48		19	67	\$7,428.19
November.....	41		11	52	7,582.67
December.....	43		13	56	8,384.33
1906.					
January.....	45		18	63	8,187.53
February.....	39		15	54	7,577.69
March.....	40	5	14	59	6,124.45
April.....	40	4	16	60	7,111.73
May.....	35	6	17	58	7,768.81
June.....	36	7	16	59	6,897.55
July.....	37	6	18	61	8,292.27
August.....	38	3	18	59	6,990.02
September.....	37	4	16	57	6,204.22
Total.....					88,439.51

TABLE 6.—Bureau of Municipalities—Consolidated report of force, May 1, 1906, to September 30, 1906.^a

Date.	Gold, monthly.	Silver, monthly.	Silver, hourly.	Total employees.	Total sala- ries and wages.
1906.					
May.....	26	5		31	\$2,307.40
June.....	31	5		36	2,894.86
July.....	33			33	1,973.33
August.....	35		1	36	2,819.81
September.....	35		1	36	3,093.17
Total.....					13,088.56

^a Previous to May 1, 1906, this bureau was a division of the Executive Office.

TABLE 7.—Fire Department—Consolidated report of force, October 1, 1905, to September 30, 1906.^a

Date.	Gold, monthly.	Silver, monthly.	Silver, hourly.	Total employees.	Total sala- ries and wages.
1905.					
October.....					
November.....					
December.....	1			1	
1906.					
January.....	1			1	\$208.33
February.....	1			1	240.03
March.....	2			2	321.68
April.....	2			2	362.50
May.....	2			2	333.33
June.....	2			2	333.34
July.....	2	3		2	333.33
August.....	2	3		5	353.83
September.....	5	3		8	536.67
Total.....					3,023.04

^a Up to January, 1906, included in the Executive Office.

TABLE 8.—*Legal Department—Consolidated report of force, October 1, 1905, to September 30, 1906.*^a

Date.	Gold, monthly.	Silver, monthly.	Silver, hourly.	Total employees.	Total sal- aries and wages.
1905.					
October.....	3	.....	.....	3	\$343.80
November.....	2	.....	.....	2	275.00
December.....	3	.....	.....	3	1,247.23
1906.					
January.....	2	.....	.....	2	744.08
February.....	3	.....	.....	3	691.67
March.....	3	.....	.....	3	720.17
April.....	3	.....	.....	3	710.41
May.....	3	.....	.....	3	710.42
June.....	3	.....	.....	3	710.42
July.....	3	.....	.....	3	710.41
August.....	4	.....	.....	4	801.05
September.....	5	.....	.....	5	1,250.01
Total.....					8,923.76

^a Known as Prosecuting Attorney's Office until September 1, 1906.TABLE 9.—*Water Commissioner—Consolidated report of force, October 1, 1905, to September 30, 1906.*

Date.	Gold, monthly.	Gold, hourly.	Silver, monthly.	Silver, hourly.	Total employees.	Total sal- aries and wages.
1905.						
October.....	1	.....	.....	.....	1	.....
November.....	2	.....	.....	.....	2	.....
December.....	2	.....	.....	.....	2	.....
1906.						
January.....	4	.....	.....	.....	4	\$457.20
February.....	4	.....	.....	.....	4	621.18
March.....	3	.....	.....	.....	3	400.00
April.....	4	.....	.....	.....	4	511.11
May.....	7	.....	.....	.....	7	958.33
June.....	7	.....	.....	.....	7	1,037.71
July.....	7	.....	.....	.....	7	1,142.71
August.....	7	1	.....	.....	8	1,247.33
September.....	8	1	.....	.....	9	1,502.51
Total.....						7,878.17

^a Up to January, 1906, included in Executive Office.TABLE 10.—*Judiciary Department—Consolidated report of force October 1, 1905, to September 30, 1906.*

Date.	Gold, monthly.	Silver, monthly.	Silver, hourly.	Total em- ployees.	Total salaries and wages.
1905.					
October.....	7	.....	.....	7	\$1,671.23
November.....	7	.....	.....	7	3,288.76
December.....	7	.....	.....	7	2,247.93
1906.					
January.....	8	.....	.....	8	2,353.45
February.....	8	.....	.....	8	2,414.60
March.....	8	.....	.....	8	2,438.77
April.....	8	.....	.....	8	2,414.55
May.....	9	.....	.....	9	2,539.60
June.....	9	.....	.....	9	2,564.19
July.....	9	.....	.....	9	2,564.55
August.....	9	.....	.....	9	2,552.10
September.....	9	.....	.....	9	2,284.60
Total.....					29,334.33

TABLE 11.—*Police Department—Consolidated report of force October 1, 1905, to September 30, 1906.*

Date.	Gold, monthly.	Silver, monthly.	Silver, hourly.	Total em- ployees.	Total salaries and wages.
1905.					
October.....	202			202	\$9,135.34
November.....	191			191	9,837.93
December.....	185			185	10,118.53
1906.					
January.....	204			204	10,743.74
February.....	205			205	10,656.35
March.....	202			202	11,236.62
April.....	217			217	11,736.65
May.....	210			210	11,597.87
June.....	215			215	11,874.59
July.....	227			227	12,325.86
August.....	241	1		242	13,067.49
September.....	239	1		240	13,527.43
Total.....					135,858.40

TABLE 12.—*Revenue Department—Consolidated report of force October 1, 1905, to September 30, 1906.*

Date.	Gold, monthly.	Silver, monthly.	Silver, hourly.	Total em- ployees.	Total salaries and wages.
1905.					
October.....	39	9	10	58	\$4,445.83
November.....	44	8	10	62	4,780.33
December.....	46	10	5	61	6,362.92
1906.					
January.....	50	10	6	66	6,398.45
February.....	55	16	9	80	6,643.54
March.....	59	13	5	77	7,151.69
April.....	64	22	8	94	7,953.14
May.....	46	18	4	68	6,350.11
June.....	49	17	4	70	6,042.57
July.....	53	17	4	74	7,422.19
August.....	51	19	4	74	7,783.73
September.....	55	19	6	80	8,093.19
Total.....					79,427.74

TABLE 13.—*Health Department—Consolidated report of force October 1, 1905, to September 30, 1906.*

Date.	Gold, monthly.	Gold, hourly.	Silver, monthly.	Silver, hourly.	Total number em- ployed.	Total salaries and wages.
1905.						
October.....	338		542	1,595	2,475	\$77,949.10
November.....	328		482	1,093	1,903	75,527.04
December.....	332	1	522	1,030	1,885	78,369.01
1906.						
January.....	344	i	563	1,293	2,201	84,931.75
February.....	359	1	577	1,304	2,241	86,940.82
March.....	357	1	590	1,345	2,293	89,295.16
April.....	351	2	584	1,298	2,235	87,892.93
May.....	337	3	581	1,231	2,152	88,269.04
June.....	340	2	632	1,162	2,136	85,964.79
July.....	357	2	704	1,244	2,307	89,841.69
August.....	354	3	748	1,325	2,430	97,042.27
September.....	367	2	724	1,273	2,366	93,274.63
Total.....						1,035,298.23

TABLE 14.—*Chief Sanitary Office—Consolidated report of force October 1, 1905, to September 30, 1906.*

Date.	Gold, monthly.	Silver, monthly.	Silver, hourly.	Total num- ber em- ployees.	Total sala- ries and wages.
1905.					
October.....	24	5	17	46	\$3,635.90
November.....	25	6	15	46	3,723.27
December.....	28	6	10	44	3,730.88
1906.					
January.....	30	6	17	53	4,721.32
February.....	33	6	14	53	4,876.13
March.....	32	8	11	51	4,814.25
April.....	31	8	15	54	5,497.59
May.....	35	8	15	58	4,915.17
June.....	34	8	15	57	5,436.78
July.....	35	8	16	59	5,861.19
August.....	33	8	16	57	5,752.19
September.....	34	8	15	57	5,105.07
Total.....					57,868.74

TABLE 15.—*Maritime Quarantine—Consolidated report of force October 1, 1905, to September 30, 1906.*

Date.	Gold monthly.	Silver, monthly.	Silver, hourly.	Total num- ber em- ployees.	Total sala- ries and wages.
1905.					
October.....	18	12	.....	30	\$1,914.12
November.....	14	10	.....	24	1,643.55
December.....	15	11	.....	26	1,504.13
1906.					
January.....	19	19	2	40	3,150.94
February.....	18	26	3	47	2,970.17
March.....	18	17	3	38	2,541.31
April.....	16	17	3	36	2,708.08
May.....	14	15	2	31	2,474.21
June.....	13	14	.....	27	2,115.49
July.....	14	17	.....	31	2,014.83
August.....	15	17	.....	32	1,935.83
September.....	14	10	.....	24	2,589.06
Total.....					27,561.72

TABLE 16.—*Hospitals—Consolidated report of force October 1, 1905, to September 30, 1906.*

Date.	Gold, monthly.	Gold, hourly.	Silver, monthly.	Silver, hourly.	Total num- ber em- ployees.	Total sala- ries and wages.
1905.						
October.....	185	.....	379	103	677	\$27,081.38
November.....	198	.....	338	78	614	28,345.51
December.....	199	1	360	64	624	30,191.99
1906.						
January.....	204	1	387	84	676	31,937.52
February.....	208	1	394	82	685	32,109.17
March.....	213	1	410	84	708	33,683.99
April.....	215	2	401	77	695	34,178.82
May.....	206	2	398	81	687	33,810.38
June.....	206	1	430	98	735	33,779.66
July.....	225	1	494	96	816	37,453.61
August.....	217	2	520	92	831	38,863.72
September.....	233	1	501	96	831	39,151.97
Total.....						401,587.72

TABLE 17.—Sanitation—Consolidated report of force October 1, 1905, to September 30, 1906.

Date.	Gold, monthly.	Gold, hourly.	Silver, monthly.	Silver, hourly.	Total number em- ployees.	Total sala- ries and wages.
1905.						
October.....	101		146	1,475	1,722	\$45,317.70
November.....	91		128	1,000	1,219	40,814.71
December.....	90		145	956	1,191	42,942.01
1906.						
January.....	91		151	1,190	1,432	45,121.97
February.....	100		151	1,205	1,458	47,186.35
March.....	94		155	1,247	1,496	48,255.61
April.....	89		158	1,203	1,450	45,508.44
May.....	82	1	160	1,133	1,376	47,069.28
June.....	87	1	180	1,049	1,317	44,632.86
July.....	83	1	185	1,132	1,401	44,512.06
August.....	89	1	203	1,217	1,510	50,400.53
September.....	86	1	205	1,162	1,454	46,428.53
Total.....						548,280.05

APPENDIX 3.—SANITARY STATISTICS.

TABLE 18.—Work of sanitization in city of Panama from October 1, 1905, to September 30, 1906.

TABLE 19.—*Work of sanitization in Colon and Cristobal from October 1, 1905, to September 30, 1906.*

Date.	Houses fumigated.	Cart-loads street dirt removed.	Cart-loads garbage removed.	Buckets night soil removed.	Blocks of street cleaned.	Tanks and barrels covered.	Ditches graded, linear feet.	Drains cleaned, linear feet.	Vegetation removed, square feet.	Surface oiled, square feet.	Lagoons cleaned, square feet.	Breed-ing places oiled.
1905.												
October.....	14	66	2,284	6,896	1,526	2,128	2,780	142,202	275,950	54,000	2,925	638
November.....	10	1,183	637	2,583	1,550	1,550	362,483	497,304	397,315	18,100	16,726	4,676
December.....	28	2,776	2,776	2,776								3,746
1906.												
January.....	11	1,035	1,648	24,680	714	958	1,501	81,011	147,601	21,606	2,296	
February.....	13	704	1,534	18,640	1,640	848	1,501	39,576	316,061	26,145	1,264	
March.....	10	936	1,665	17,360	1,665	3,633	1,501	8,170	432,493	16,422	1,838	
April.....	4	928	1,427	14,080	1,440	2,366	830	138,426	558,012	4,500	3,264	
May.....	23	1,154	2,034	18,160	1,672	1,867	5,430	16,650	115,198	8,067		
June.....	8	669	2,950	14,580	960	1,234	1,305	730,060	181,044	146,456	18,262	
July.....	16	762	2,956	26,056	2,240	1,305	80,494	111,753	99,960	2,291	6,460	
August.....	555	3,517	38,620	38,620	2,291	1,419	190,884	28,250	1,040	1,040	9,275	
September.....	600	3,167	43,458	43,458							10,091	
Total.....	137	8,653	26,575	225,132	4,786	22,080	11,946	1,059,886	3,791,071	330,202	71,658	69,877

TABLE 20.—Sanitation of Canal Zone from October 1, 1905, to September 30, 1906.

Date.	Brush and grass cut, square yards.	New ditches dug, lineal feet.	New ditches stoned and cemented, lineal feet.	Old ditches cleaned and graded, lineal feet.	Old ditches stoned, lineal feet.	Old ditches filled, lineal feet.	Swamp ditches filled, lineal feet.	Swamp drained, square yards.	Garbage cans emptied per day.	Night-soil pails emptied per day.	Houses fumigated.	Barrels covered.
October.....	2,164,537	14,742	1,785	104,996	521	188	1,177	18,612	1,168	628	96	100
November.....	2,200,000	20,000	2,500	125,000	250,000	.....	1,100	540	1,240	570	22	127
December.....	1,000,000	12,500	.....	113,000	.....	2,000	8,000	1,250	750	750	33	.....
1906.												
January.....	1,188,140	10,999	2,116	148,066	.....	310	880	8,121	1,216	651	21	.....
February.....	1,560,000	8,800	662	100,000	.....	1,067	.....	14,300	1,217	626	8	.....
March.....	1,390,182	21,257	5,557	113,063	.....	5,866	.....	19,375	1,616	745	15	.....
April.....	887,306	22,394	1,060	164,110	5,866	.....	45,937	1,446	550	3	.....	.....
May.....	1,160,343	29,053	2,318	188,539	380	.....	12,790	1,723	840	15	.....	.....
June.....	1,795,505	14,725	2,961	.....	992	.....	14,786	1,751	772	44	.....	.....
July.....	2,474,948	7,276	1,369	140,296	125	.....	500,150	1,822	840	37	.....	.....
August.....	2,460,846	13,979	1,233	245,054	61	.....	157,316	1,966	808	61	.....	.....
September.....	3,235,057	23,964	1,364	186,810	710	.....	15,303	2,155	762	39	.....	.....
Total.....	21,406,954	200,239	20,925	1,628,994	288,655	5,166	815,239	18,600	8,562	394	237	.....

TABLE 21.—Summary, by months, of quarantine work accomplished from October 1, 1905, to September 30, 1906, inclusive.

Date.	Vessels inspected and past.	Vessels detained in quarantine.	Vessels furnished or disinfected.	Crew inspected.	Passenger-s in- specified.	Persons vac- cinated. ^a	Persons held in quar- antine to com- plete period of incuba- tion of yellow fever and plague.	Persons leaving for foreign ports.		
								Cabin.	Steer- age.	Total.
1905.										
October.....	67	2	6	3,341	3,448	761	34	52	759	2,227
November.....	56	.....	13	3,941	3,940	241	8	36	952	2,730
December.....	65	.....	26	4,183	3,710	247	15	60	1,344	2,001
1906.										
January.....	69	.....	18	3,681	4,905	374	34	78	2,205	3,700
February.....	66	.....	27	3,613	5,877	469	475	138	1,140	4,407
March.....	78	.....	23	4,297	6,209	259	364	8	1,168	4,580
April.....	70	.....	23	3,769	4,674	388	219	.....	1,260	2,944
May.....	69	.....	30	4,926	5,968	348	153	20	1,395	4,157
June.....	69	.....	12	4,147	3,606	234	171	.....	1,103	2,063
July.....	67	.....	18	3,559	3,392	509	156	.....	1,276	1,820
August.....	63	.....	13	3,838	2,845	481	197	6	1,228	3,245
September.....	64	1	10	5,039	2,723	404	179	27	1,347	1,054
Total.....	803	3	219	48,234	51,197	4,725	2,005	425	14,177	31,948
										46,125
										8,469
										16,886
										25,355

^a Besides these, which were vaccinated at ports of arrival, there were 13,549 persons vaccinated either at ports of departure or en route, because of the compulsory vaccination law enforced on the Isthmus, making 18,274 persons vaccinated because of this law.

TABLE 21.—Summary, by months, of quarantine work accomplished from October 1, 1905, to September 30, 1906, inclusive—Continued.

Date.	Persons arriving from coast towns of Republic of Panama.	Immigration from foreign ports.			Immigration from coast towns of Republic of Panama.	Total increase by immigration.	Immigrants recommended for rejection under immigration laws.	Certificates issued to outgoing passengers.	Circulars relative to malarial fever distributed.	Persons refused certificates account to diseases barred by immigration laws.	Bills of health issued.	Bills of health reviewed.
		Cabin	Steamers	Increase.								
October 1905.	988	418	161	948	1,100	570	1,679	3	66	.....	3,200	3
October.....	1,174	609	208	144	442	505	947	5	65	.....	500	2
November.....	1,089	904	746	324	1,069	185	1,254	3	50	.....	743	2
December.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
January 1906.	886	635	750	2,405	3,155	251	3,406	.....	45	1	780	2
February.....	1,233	1,661	661	3,469	4,130	428	3,702	.....	34	3	900	3
March.....	1,541	1,332	450	2,824	3,284	209	3,493	1	45	1	3,500	4
April.....	1,758	1,233	523	1,041	1,364	830	2,064	.....	18	1	3,500	2
May.....	1,806	999	612	2,263	2,905	810	3,715	.....	21	2	2,500	4
June.....	1,241	1,133	154	197	351	108	459	9	54	2	1,500	1
July.....	1,034	883	504	824	1,328	151	1,479	14	94	3	2,000	1
August.....	1,414	989	344	443	757	415	1,202	72	4	13	2,000	.....
September.....	1,040	716	506	140	646	333	979	79	79	7	2,000	.....
Total.....	15,241	11,602	5,708	15,062	20,770	3,639	24,409	40	633	23	23,123	25
												137

^a Decrease.

TABLE 22.—*Monthly report of hospitals.*

OCTOBER, 1805.

Hospital.	Patients in hospital 1st of month.	Admitted during month.	Died during month.	Discharged during month.		Patients in hospital end of month.	Total.
				Canal employ- ees.	Railroad em- ployees.		
neon.....	241	11	63	315	669	98	700
colon.....	121	17	29	167	533	76	590
intestines.....	27	4	48	79	227	5	101
liver.....	19	0	0	19	94	0	100
organs.....	20	0	0	20	116	0	126
uterus.....	428	32	140	690	1,639	118	1,761
Total.....							1,761

NOVEMBER, 1805.

neon.....	219	15	49	283	904	36	150	1,660	30	1	9	40	867	33	119	1,019	226	17	71	314
colon.....	159	30	36	225	406	97	57	560	9	10	29	406	79	45	530	150	38	38	226	226
traidores.....	91	6	48	145	256	5	21	282	8	3	11	249	3	6	258	90	8	60	158	158
orgona.....	15	30	2	32	115	7	15	104	1	1	99	1	99	19	99	25	25	2	27	27
Total.....	514	51	135	700	1,785	138	235	2,158	49	11	23	83	1,740	115	176	2,031	510	63	171	744

DECEMBER, 1890. 5

REPORT OF THE Isthmian Canal Commission.

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JANUARY, 1906.

Ancon.....	177	11	60	257	786	41	191	948	25	2	5	32	730	40	123	863	208	10	62	280
Colon.....	126	31	34	191	490	156	100	746	16	3	10	29	487	144	82	713	113	40	42	195
Miraflores.....	110	7	65	182	333	1	18	362	11	1	3	16	328	1	15	344	104	6	65	175
Gorgona.....	19	1	19	107	8	1	116	1	1	1	1	104	8	1	113	21	21	21	21	
Culebra.....	22	1	3	26	219	1	4	224	6	1	1	7	199	2	6	207	36	36	36	36
Total.....	454	50	171	675	1,935	207	244	2,386	59	6	19	84	1,848	195	227	2,270	482	56	169	707

FEBRUARY, 1906.

Ancon.....	208	10	62	280	810	48	122	980	14	4	3	21	751	34	119	904	253	20	62	335	
Colon.....	113	40	42	195	284	112	87	483	12	2	9	23	300	118	76	494	85	32	44	161	
Miraflores.....	104	6	65	175	295	34	19	348	10	2	1	12	290	23	1	314	99	15	33	197	
Gorgona.....	21	1	1	21	63	3	1	97	1	1	1	17	97	1	1	98	18	1	1	18	
Culebra.....	36	1	1	36	209	2	8	219	4	4	4	2	6	163	1	2	196	48	1	1	53
Total.....	462	56	169	707	1,691	199	237	2,127	40	9	15	64	1,631	177	198	2,006	502	69	193	764	

MARCH, 1906.

Ancon.....	263	20	62	335	801	95	113	950	20	2	10	32	778	38	97	913	256	16	68	340
Colon.....	85	32	44	161	357	95	94	546	11	4	8	23	289	91	74	454	142	32	56	230
Miraflores.....	90	15	83	197	336	35	16	387	11	2	8	21	322	32	32	365	102	16	80	198
Gorgona.....	17	1	4	18	98	3	1	101	1	1	1	17	97	1	1	88	18	3	21	55
Culebra.....	48	1	1	53	350	1	4	335	13	13	13	13	310	8	8	55	120	15	15	16
Total.....	502	69	193	764	2,038	172	229	2,439	57	8	26	91	1,895	166	191	2,252	558	67	206	860

APRIL, 1906.

Ancon.....	256	16	68	340	716	57	75	848	24	1	4	29	762	51	91	904	186	21	48	255
Colon.....	142	32	56	230	165	70	78	313	9	4	12	25	223	66	88	377	75	32	34	141
Miraflores.....	102	16	80	168	82	10	20	112	7	2	5	14	146	16	6	168	31	8	89	128
Gorgona.....	18	3	1	21	100	5	1	106	1	1	1	1	100	5	1	100	18	2	2	20
Culebra.....	55	1	1	55	237	2	1	240	14	1	1	14	241	2	1	244	36	1	4	37
Empire.....	15	1	1	16	92	2	2	96	3	3	3	3	100	2	3	105	4	4	4	37
Total.....	538	67	205	800	1,392	146	177	1,715	57	8	21	86	1,572	142	190	1,904	350	63	172	585

TABLE 22.—*Monthly report of hospitals—Continued.*

MAY, 1906.

Hospital.	Patients in hospital		Admitted during month.		Died during month.		Discharged during month.		Patients in hospital end of month.	
	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.
Ancon.....	186	21	48	255	1,071	67	94	1,232	23	8
Colon.....	75	32	34	141	205	58	75	338	10	5
Miraflores.....	31	8	80	128	18	66	9	100	2	1
Gorgona.....	18	2	20	94	5	1	1	139	8	1
Culebra.....	36	4	1	37	135	1	1	123	2	1
Empire.....	4	4	4	122	122	115	115	115	115	115
Total.....	350	63	172	585	1,645	140	213	1,998	45	9
									29	83
									1,489	131
									166	1,786
									461	63
									190	714

JUNE, 1906.

Hospital.	Patients in hospital		Admitted during month.		Died during month.		Discharged during month.		Patients in hospital end of month.	
	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.
Ancon.....	324	28	50	402	1,218	83	117	1,418	39	2
Colon.....	71	24	40	135	792	148	135	1,075	27	5
Miraflores.....	16	8	99	123	181	27	40	248	2	1
Gorgona.....	16	2	1	18	121	11	1	132	1	1
Culebra.....	25	1	1	27	109	5	1	205	11	1
Empire.....	9	4	4	9	166	1	1	167	2	1
Total.....	461	63	190	714	2,677	274	294	3,245	82	8
									44	134
									2,886	212
									212	213
									2,811	670
									117	117
									227	1,014

JULY, 1906.

Hospital.	Patients in hospital		Admitted during month.		Died during month.		Discharged during month.		Patients in hospital end of month.	
	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.	1st of month.	last of month.
Ancon.....	330	43	63	436	1,405	69	112	1,586	72	2
Colon.....	173	50	57	280	854	183	235	1,272	24	4
Miraflores.....	79	20	107	206	242	11	281	10	10	1
Gorgona.....	27	1	1	28	140	13	4	157	3	2
Culebra.....	48	3	51	307	2	7	316	21	1	1
Empire.....	13	13	301	301	308	9	7	308	10	14

AUGUST, 1806.

SEPTEMBER, 1906.

TABLE 22.—*Monthly report of hospitals*—Continued.

RECAPITULATION.

Hospital.	Patients in hospital October 1, 1905.	Admitted during year.	Died during year.	Discharged during year.	Patients in hospital September 30, 1906.	Total treated.
Ancon.....	315	13,270	518	12,670	397	13,585
Colon.....	167	9,025	385	8,457	350	9,192
Miraflores.....	79	3,110	186	2,835	168	3,189
Gorgona.....	19	1,453	32	1,420	20	1,472
Culebra.....	20	2,678	136	2,528	34	2,698
Empire ^a		1,424	27	1,384	13	1,424
Bas Obispo ^b		367	16	331	20	367
Tabernilla ^b		1,172	31	1,115	26	1,172
Taboga ^c	55	348		371	32	403
Las Cascadas ^d		165	5	139	21	165
Total.....	655	33,012	1,336	31,250	1,081	33,667

^a Opened March 1, 1906.^b Opened July 1, 1906.^c First entered on consolidated record August 1, 1906.^d Opened September 1, 1906.

TABLE 23.—*Death rate in the Canal Zone, Panama and Colon, from October 1, 1905, to September 30, 1906.*

Date.	Entire population death rate per 1,000.	Employees of Isthmian Canal Commission death rate per 1,000.	Date.	Entire population death rate per 1,000.	Employees of Isthmian Canal Commission death rate per 1,000.
1905.			1906.		
October.....	69.51	33.27	April.....	34.91	30.00
November.....	67.80	35.45	May.....	52.60	24.79
December.....	65.17	40.36	June.....	62.87	41.55
1906.			July.....	67.52	64.71
January.....	46.18	40.36	August.....	64.10	62.12
February.....	42.24	29.09	September.....	54.54	57.34
March.....	42.57	37.44	Average.....	55.83	41.37

TABLE 24.—*Total number of cases of yellow fever and deaths, by months, from October 1, 1905, to September 30, 1906.*

Date.	Cases.	Deaths.	Date.	Cases.	Deaths.
1905.			1906.		
October.....	3	3	April.....		
November.....	3	3	May.....	1	1
December.....	1	—	June.....		
1906.			July.....		
January.....			August.....		
February.....			September.....		
March.....			Total.....	8	7

TABLE 25.—*Table showing deaths, by diseases, from October 1, 1905, to September 30, 1906.*

	Panama.	Colon and Cristobal.	Ancon Hos-pital.	Line hos-pitals.	Colon Hos-pital.	Zone.	Total.
<i>I.—General diseases.</i>							
Typhoid fever (abdominal typhus).....	9	1	20	10	8		48
Relapsing fever.....	184	133	50	93	85	170	715
Malarial fever.....	5	4		2			11
Malarial cachexia.....	1		7	3	3		14
Hæmoglobinuria fever.....							2
Smallpox.....		1			1		2
Measles.....	2					1	3
Diphtheria and croup.....	1					1	2
Influenza.....						4	4
Dysentery.....	42	13	28	20	13	21	137
Amoebic.....	13	6	6	4	6	6	41
Yellow fever.....	1		3		3		7
Leprosy.....				3			3
Beriberi.....	94	1	7	7	2		111
Erysipelas.....	2						2
Purulent infection and septicæmia.....	8	3	16	3	7	2	39
Tuberculosis of the lungs.....	161	30	15	28	12	22	268
General tuberculosis.....			3	2			5
Syphilis.....	5			3			8
Cancer and other malignant tumors of the buccal cavity.....			1				1
Cancer and other malignant tumors of stomach and liver.....							1
Cancer and other malignant tumors of the female genital organs.....			2		1		6
Cancer and other malignant tumors of other organs not specified.....	3	1				1	5
Other tumors (tumors of the female genital organs excepted).....	1	1	1	2		1	6
Acute articular rheumatism.....	1						1
Chronic rheumatism and gout.....	1					2	3
Diabetes.....	1					1	2
Anæmia, chlorosis.....	5				1		7
Other general diseases.....	1		2		2	1	6
Acute and chronic rheumatism.....	1			1		3	3

TABLE 25.—Table showing deaths by diseases, etc.—Continued.

	Panama.	Colon and Cristobal.	Anton Hos- pital.	Line hospi- tals.	Colon Hos- pital.	Zone.	Total.
II.—Diseases of the nervous system and the organs of special sense.							
Simple meningitis.....	19	2	11	7	3	3	45
Epidemic cerebro-spinal meningitis.....	4	8	1	1	1	1	15
Pneumococcal meningitis.....		1			2		3
Other diseases of the spinal cord.....	1						1
Congestion and hemorrhage of brain.....	18	8	3	7		5	41
Softening of the brain.....	1	2	1	1		1	5
General paralysis.....	5					1	10
Other forms of mental alienation.....	1						1
Epilepsy.....	1	2		1		1	5
Convulsions (nonpuerperal, 5 years and over).....		5				3	8
Convulsions (under 5 years).....	1	10	1			27	39
Tetanus.....	23	5	1		3	4	36
Other diseases of the nervous system.....	4	1	2	2	1		10
Diseases of the ear.....	1				1		2
III.—Diseases of the circulatory system.							
Pericarditis.....	2		7	2	1		12
Acute endocarditis.....	2	2		4		2	10
Organic diseases of the heart.....	28	16	5	6	3	20	78
Angina pectoris.....	1						1
Diseases of the arteries (atheroma, aneurism, etc.).....	4		3	1	1		9
Hemorrhages.....	7	1				3	11
Other diseases of circulatory system.....	12	3			3	5	23
IV.—Diseases of the respiratory system.							
Acute bronchitis.....	23	1	2	1		6	33
Chronic bronchitis.....	2						2
Broncho-pneumonia.....	23	7	19	9	1	5	64
Pneumonia.....	106	48	178	132	149	38	651
Pleurisy.....	3		2				5
Congestion and apoplexy of the lungs.....	7		1				8
Gangrene of the lungs.....	1	1	2	1	3		8
Other diseases of the respiratory system (phthisis excepted).....	10	1	3	1		2	17
V.—Diseases of the digestive system.							
Diseases of the mouth and adnexa.....	1						1
Other diseases of the stomach (cancer excepted).....	8	2				2	12
Diarrhea and enteritis (under 2 years).....	63	26		1	1	15	106
Chronic diarrhea and enteritis (under 2 years).....	17	4		1	2	4	28
Diarrhea and enteritis (2 years and over).....	63	10	5	2	1	9	90
Intestinal parasites.....	4	2	1		1	7	15
Uncinariasis.....	1	3	6	5		3	18
Hernia and intestinal obstructions.....	7		1		1		9
Other diseases of the intestines.....	8						8
Cirrhosis of the liver.....	6	1	4	2	2	1	16
Other diseases of the liver.....	16	5	4	3	6	1	36
Simple peritonitis.....	5	6	8	3	4	1	27
Other diseases of the digestive system (cancer and tuberculosis excepted).....	7		1		3	2	13
Appendicitis and abscess of iliac fossa.....	2		1				3
VI.—Diseases of the genito-urinary system and its adnexa.							
Acute nephritis.....	24	10	9	6	12	3	64
Bright's disease.....	22	5	21	11	10	6	75
Other diseases of the kidneys and their adnexa.....	3	1	3	2	3	1	13
Diseases of the bladder.....				1			1
Uterine tumors (noncancerous).....	1						1
Other diseases of the uterus.....		2					2
VII.—The puerperal state.							
Accidents of pregnancy.....	2		2			6	10
Puerperal hemorrhage.....	1						1
Other accidents of labor.....	3	1					4
Puerperal septicaemia.....	1						1
Other puerperal accidents (sudden death).....		1			1		2
VIII.—Diseases of the skin and cellular tissue.							
Gangrene.....	1	1		1	1		4
Acute abscess, phlegmon.....	1		1				2
Other diseases of the skin and its adnexa.....	4						4

TABLE 25.—Table showing deaths, by diseases, etc.—Continued.

	Panama.	Colon and Cristobal.	Ancon Hos- pital.	Line hospi- tals.	Colon Hos- pital.	Zone.	Total.
IX.—Diseases of the organs of locomotion.							
Nontuberculous diseases of the bones.....	2						2
Arthritis and other diseases of the joints.....	3		2				5
X.—Malformations.							
Congenital malformations (stillbirths excepted)	1						1
XI.—Early infancy.							
Congenital debility, icterus, and sclerema.....							
Other diseases peculiar to early infancy.....	20	16	1			1	59
XII.—Old age.							
Senile debility.....	5	5		1		12	23
XIII.—External causes.							
Suicide by hanging or strangulation.....	1				1		1
Suicide by drowning.....					1		1
Other suicides.....		1					1
Fractures.....	3		1	2		1	7
Other accidental traumatisms.....	11	9	9	11	6	36	82
Burns and scalds.....	1	1	4		1		7
Sunstroke.....	1						1
Electric shock.....	2						2
Accidental drowning.....	3	8			1	10	22
Absorption of deleterious gases (nonsuicidal)	3	3				1	7
Other acute poisonings.....	9	1	2	2	1	4	19
Other external violence.....	5	1	2		1	7	16
XIV.—Ill-defined diseases.							
Dropsy.....	14	3				14	31
Sudden death.....	4	2				2	8
Cause of death unspecified or ill defined.....	36	40	5	1	1	73	156
Total.....	1,249	481	504	417	376	609	3,636

APPENDIX 4.—STATISTICS—DEPARTMENT OF REVENUES.

TABLE 26.—Statement of registry business in the Canal Zone for the period January 1 to June 30, 1906.

Office.	Domestic letters registered.	Domestic parcels registered.	Foreign letters registered.	Foreign parcels registered.	Letters and parcels registered free.
Ancon.....	1,472	179	1,858	25	1,363
Ancon, Station A.....	1,161	130	307	7	3,767
Bas Obispo.....	33		1,067	52	153
Bohio.....	21	2	4		50
Cristobal.....	2,988	204	2,879	17	869
Culebra.....	1,463	87	1,045	17	872
Corozal.....	252	15	242	7	160
Empire.....	874	108	2,086	19	755
Gatun.....	35		9		20
Gorgona.....	446	55	998	2	263
La Boca.....	454	50	379	18	318
Matachin.....	131	4	323	2	59
Paraiso.....	374	9	600	4	179
Pedro Miguel.....	752	39	473	5	404
San Pablo.....	13		52		41
Tabernilla.....	63	1	208		88
Total.....	10,532	883	12,540	175	9,361

TABLE 27.—*Statement of money orders issued from June 1 to September 29, 1906.*

[United States currency.]

Name of post-office.	June 1-30.		July 1-28.		July 29-September 1.		September 2-29.		Total.	
	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.
Ancon.....	131	\$2,372.28	233	\$5,338.96	460	\$20,821.47	381	\$7,933.83	1,205	\$36,466.54
Sta. A, Ancon.....	134	3,720.12	345	20,025.83	295	7,457.87	205	6,508.80	979	37,712.62
Corozal.....	29	308.66	39	646.41	49	759.73	60	1,181.33	177	2,806.13
Bas Obispo.....	74	1,860.36	126	2,939.75	239	5,293.34	187	5,597.01	626	15,690.46
Cristobal.....	350	10,954.42	601	17,642.93	1,149	29,378.88	1,254	31,736.40	3,363	89,712.63
Culebra.....	281	8,395.97	535	18,935.98	767	23,036.34	645	19,475.97	2,228	69,844.26
Empire.....	176	6,454.46	277	8,075.77	559	12,660.34	560	12,225.51	1,672	39,416.08
Gorgona.....	204	9,887.38	311	13,273.38	378	13,449.60	405	16,656.78	1,298	53,267.14
La Boca.....	64	1,625.63	132	2,627.71	152	3,077.15	120	2,422.39	468	9,752.88
Las Cascadas.....					71	1,119.56	131	2,444.36	202	3,563.92
Matachin.....	27	336.76	39	414.25	56	774.41	58	650.63	180	2,176.05
Paraiso.....	49	1,861.13	108	3,744.67	99	4,287.45	226	6,104.18	482	15,997.43
Pedro Miguel.....	75	1,947.48	191	3,769.66	210	4,674.07	159	3,896.63	635	14,287.84
Tabernilla.....	8	342.50	37	965.75	75	1,461.95	75	1,281.14	195	4,051.34
Total.....	1,611	50,067.15	2,974	98,401.05	4,659	128,252.16	4,466	118,114.96	13,710	394,835.32

I hereby certify that the above statement is true and correct.

HERMAN A. GUDGER,
Acting Director of Posts.

ANCON, CANAL ZONE, October 1, 1906.

TABLE 28.—*Detailed statement of the collections of distillation tax from October 1, 1905, to September 30, 1906.*

[United States currency.]

	Date.	Licenses.	Fines.	Amount.
1905.				
October.....		5		\$450.00
November.....		7		506.25
December.....		11		687.05
1906.				
January.....		8	1	601.10
February.....		9		644.40
March.....		10		664.30
April.....		10		657.20
May.....		13		808.00
June.....		10		529.10
July.....		6		376.80
August.....		10		612.50
September.....		12		669.10
Total.....		111	1	7,205.80

I hereby certify that the above statement is correct.

HERMAN A. GUDGER,
Acting Collector of Revenues.

ANCON, C. Z., October 1, 1906.

TABLE 29.—*Sales of Panama postage stamps surcharged "Canal Zone," from October 1, 1905, to September 30, 1906.*

[United States currency.]

	1905.	1906.	
October.....	\$1,588.59	April.....	\$3,412.93
November.....	1,620.31	May.....	3,179.06
December.....	2,582.13	June.....	4,122.88
		July.....	3,412.03
		August.....	2,986.23
January.....	2,004.18	September.....	3,725.87
February.....	2,359.01	Total.....	
March.....	3,724.97		34,717.19

I hereby certify that the above statement is correct.

HERMAN A. GUDGER,
Acting Director of Posts.

ANCON, C. Z., October 1, 1906.

TABLE 30.—*Detailed statement of the collection of rent of lands and rent of buildings from October 1, 1905, to September 30, 1906.*

[United States currency.]

	Date.	Lands.	Buildings.	Total.
	1905.			
October.....				^a \$751.64
November.....				^a 785.35
December.....				^a 688.02
	1906.			
January.....		\$733.06	\$40.60	773.66
February.....		833.20	60.25	893.45
March.....		570.21	11.50	581.71
April.....		968.39	16.50	984.89
May.....		975.57	39.50	1,015.07
June.....		826.37	45.00	871.37
July.....		465.29	.....	465.29
August.....		986.53	22.00	1,008.53
September.....		401.55	24.60	426.15
Total.....		6,760.17	259.95	9,255.13

^a No separate amounts can be given for the collection of land rent and of buildings rent during the months of October, November, and December, 1905, because prior to January, 1906, both rents were kept in a single account.

I hereby certify that the above statement is correct.

HERMAN A. GUDGER,
Acting Collector of Revenues.

ANCON, CANAL ZONE, October 1, 1906.

TABLE 31.—*Detailed statement of the collections of customs fines and penalties from October 1, 1905, to September 30, 1906.*

[United States currency.]

February, 1906.....		\$350
March, 1906.....		350
Total.....		700

I hereby certify that the above statement is correct.

HERMAN A. GUDGER,
Acting Collector of Revenues.

ANCON, CANAL ZONE, October 1, 1906.

TABLE 32.—*Detailed statement of the collections of the rent of material from October 1, 1905, to September 30, 1906.*

[United States currency.]

	1905.		1906.	
October.....	\$2.00	March.....	\$3.64	
November.....	9.75	April.....	19.75	
December.....	18.14	June.....	^a 76.67	
		September.....	7.18	
		Total.....	175.51	
1906.				
January.....	4.97			
February.....	33.41			

I hereby certify that the above account is correct.

HERMAN A. GUDGER,
Acting Collector of Revenues.

ANCON, CANAL ZONE, October 1, 1906.

^a Includes quarantine service.

TABLE 33.—*Detailed statement of the sales of stamped paper and revenue stamps from October 1, 1905, to September 30, 1906.*

[Panamanian silver.]

	Date.	Stamped paper.	Revenue stamps.
	1905.		
October.....		\$8.80	\$0.80
November.....		11.20	.....
December.....		33.80	.....
	1906.		
January.....		14.20	.....
Total.....		68.00	.80

NOTE.—The sale of stamped paper and revenue stamps was discontinued on January 31, 1906.

I hereby certify that the above statement is correct.

HERMAN A. GUDGER,
Acting Collector of Revenues.

ANCON, CANAL ZONE, October 1, 1906.

TABLE 34.—*Division of customs.—Statement of vessels entering and clearing, and movement of passengers and cargo at port of Cristobal, January, 1906, to September, 1906, inclusive.*

Nation.	Class.	Number entering.	Tonnage.	Number clearing.	Tonnage.
American.....	Sail.....	16	13,053	16	13,053
Do.....	Steam.....	1	287	1	287
British.....	Sail.....	3	933	3	933
Do.....	Steam.....	14	23,652	13	21,697
Norwegian.....	do.....	12	18,066	10	14,741
Danish.....	do.....	1	1,572	1	1,572
Total.....		47	57,563	44	52,283

Vessels remaining in port.....		3
Tonnage remaining in port.....		5,280
Services rendered seamen:		
Seamen discharged.....		5
Seamen shipped.....		18
Seamen deserted.....		0
Seamen deceased.....		0
Movement of passengers and cargo:		
Cargo arriving in transit.....		1,980
Cargo arriving local.....		57,838
Cargo departing in transit.....		940
Cargo departing local.....		0
Passengers arriving.....		1
Passengers departing.....		70

I certify that the foregoing account is correct.

HERMAN A. GUDGER,
*Acting Collector of Revenues, Ex Officio Collector of Customs.*TABLE 35.—*Division of customs.—Statement of vessels entering and clearing, and movement of passengers and cargo at port of Ancon, October, 1905, to September, 1906, inclusive.*

Nation.	Class.	Number entering.	Tonnage.	Number clearing.	Tonnage.
American.....	Steam.....	57	109,157	55	106,784
Do.....	Sail.....	1	1,307	1	1,307
Do.....	Warship.....	1	3,000	2	4,000
Do.....	Cruiser.....	1	9,700	1	9,700
British.....	Steam.....	48	72,680	49	78,584
Do.....	Yacht.....	1	183	1	183
Chilian.....	Steam.....	26	42,602	25	40,689
German.....	do.....	5	14,293	4	11,989
Total.....		140	252,922	138	253,236

Services rendered seamen:						
Seamen discharged.....						53
Seamen shipped.....						12
Seamen deserted.....						49
Seamen deceased.....						3
Movement of passengers and cargo:						
Cargo arriving in transit.....						98,177
Cargo arriving local.....						14,243
Cargo departing in transit.....						159,161
Cargo departing local.....						254
Passengers arriving first class.....						2,637
Passengers arriving second class.....						3,013
Passengers departing first class.....						2,503
Passengers departing second class.....						2,222

I certify that the foregoing account is correct.

HERMAN A. GUDGER,
Acting Collector of Revenues, Ex Officio Collector of Customs.

APPENDIX 5.—STATISTICS—JUDICIARY DEPARTMENT.

TABLE 36.—Statement of business transacted in court of the first judicial circuit of the Canal Zone, November 1, 1905, to August 31, 1906, inclusive.

CRIMINAL CASES.

Month.	Cases filed.	Convicted.	Acquitted.	Dismissed.	Collections.	
					Fines.	Costs.
November.....	1				1	
December.....	5	2			3	
January.....	3	3				
February.....	2				2	
March.....	3	1			2	
April.....	11	5	2	4	25.00	10.80
May.....	6	3	1	2	25.00	
June.....	9	9			60.00	2.75
July.....	2	2				
August.....	8	2	2	3	20.00	
Total.....	50	27	5	17	180.00	22.75

Civil cases:						
Cases filed.....						11
Cases settled.....						8
Cases pending.....						3
Costs.....						\$93.65
Number of sessions of court.....						74
Total collections.....						\$296.40

TABLE 37.—Statement of business transacted in court of second judicial circuit of Canal Zone, November 1, 1905, to September 1, 1906.

CRIMINAL CASES.

Month.	Cases.	Convic-	Acquit-	Dismiss-	Unset-	Collections.	
						Fines and for- feitures.	Costs.
November.....	10	9	1				
December.....	5	4		1		\$25.00	
January.....	5	3	2	1		75.00	
February.....	9	4	2	3		1,030.00	\$10.10
March.....	19	12	5	3	1	15.65	16.05
April.....	13	4	5	5	1		
May.....	16	10	7	8		285.00	32.45
June.....	19	16	1	2		180.00	37.95
July.....	17	10	2	4	1	55.00	16.00
August.....	20	16	8	2		175.00	32.80
Total.....	133	88	33	29	3	1,840.65	145.35

Civil cases:						
Cases filed.....						43
Cases settled.....						28
Cases pending.....						15
Costs.....						\$181.10
Number of sessions of court.....						58
Number of cases disposed of.....						161
Total collections.....						\$2,167.10

NOTE.—Disparity in number of criminal cases and the number disposed of due to there being some cases with from two to four convictions or vice versa.

TABLE 38.—*Statement of business transacted in court of third judicial circuit of Canal Zone, November 1, 1905, to September 1, 1906.*

CRIMINAL CASES.

Month.	Cases.	Con- victed.	Dis- missed.	Ac- quitted.	Sessions.	Fines.	Costs.
November.....	3	1		2	5		
December.....	1			1	3		
January.....	8	4	2	1	8	\$25.00	\$3.00
February.....	3	2			3		
March.....	4	2	2		6		
April.....	2	2			4	5.01	7.05
May.....	13	10		3	6	296.00	50.50
June.....	4	4			4		
July.....	6	5	1		4		
August.....	2			2	3		
Total.....	46	30	6	10	46	326.01	60.55

Civil cases:

Cases filed.....	21
Cases decided.....	15
Cases pending.....	6
Sessions.....	42
Costs.....	\$112.07

TABLE 39.—*Statement of business transacted in the supreme court of the Canal Zone, November 1, 1905, to August 31, 1906, inclusive.*

Total cases heard.....	11
Total cases decided.....	11
Total costs collected.....	\$36.35
Total sessions.....	15
Number of attorneys admitted.....	9

APPENDIX 6.—STATISTICS—CRIMINAL.

TABLE 40.—*Statement of arrests made by the Canal Zone police, October 1, 1905, to September 30, 1906, inclusive.*

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
Accessory to murder.....												1	1
Adultery.....	3	2	2	2	1				1		1		11
Affray.....													1
Assault.....	20	27	32	21	21	18	28	14	18	8	12	16	235
Assaulting an officer.....							1				2	6	9
Assault and battery.....	2	1	1	12	4	13	3	12	10	6	11	4	79
Assault with deadly weapon.....	1	3	2		2	3	1	5	1	2	1	3	24
Attempt to assault.....	1	1	1	1					2	1			4
Attempt to kill.....	3	1			1				2	1			8
Attempt to rape.....										1			1
Breaking and entering.....					1		1						2
Breaking jail.....												2	2
Broaching cargo.....					1		1	1	1	1	7	1	5
Burglary.....	9					1				1			17
Cohabiting with child under 13 years.....				1									1
Concealed weapons.....	2	6	22	2	2	2		1	2				39
Contempt of court.....	2	2	8	6			2	4	1	3	2	1	31
Criminal carelessness.....												3	3
Creating nuisance.....								2	1	4			7
Cruelty to animals.....	1	1		1	2	1		5	1	5	1	3	21
Cruelty to children.....				1		1				1			4
Reported for various miscellaneous causes.....	1	1	11	1	3	3		3					23
Desertions.....	8	3		1				4			6		22
Destroying public property.....							1						1
Disorderly conduct.....	11	13	27	32	59	34	50	45	40	50	60	78	499
Disturbing peace.....	31	16	22	39	47	47	45	48	31	31	24	16	397
Embezzlement.....		2	5	2	1	1	1	1	1	2	3	1	20
Enticing cohabitation.....				2							2		4
False weights.....	4	8	5	7		2	1						27
Fast driving.....	1												1
Fighting.....											23	9	32
Forgery.....	4	2	2	2	2	1	1	1	4	4	5		26

TABLE 40.—*Statement of arrests made by the Canal Zone police, October 1, 1905, to September 30, 1906, inclusive—Continued.*

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
Fraud.....	6	2	1	4			6	9	9	10	1	3	51
Fugitive from justice.....								1					1
Fugitive from Insane Asylum.....	2												2
Gambling.....	1	8		1	11	1	2	4	5	2	4	4	30
Grand larceny.....													25
Housebreaking.....													1
Indecent exposure.....	1	8	4	2	8	3	2	2	3	6	2	6	47
Insanity.....	4	3	2	2	1	1		2	3	6	5	5	32
Interfering with officer.....	6		2				1						9
Intoxication.....	14	3	5	8	28	22	19	35					84
Intoxication and disorderly.....	43	29	37	17	28	22	39	19	26	38	69	75	442
Kidnapping.....				2	2								5
Keeping firearms without license.....							1				3	3	6
Keeping open after hours.....													1
Larceny.....	19	19	37	26	26	29					6	1	163
Libel.....								1	1	7			9
Malicious mischief.....													21
Murder.....	1		1		1	2	2	5	5	3	1		3
Manslaughter.....		1			1								1
Obscene and indecent language.....	8	8	14	9	9	9	6	15	14	14	6	16	128
Obstructing railroad track.....											1		1
Obtaining money or goods under false pretense.....	3	2	6	13	10	6	3	1					44
Passing counterfeit money.....													1
Perjury.....					1								2
Petit larceny.....							37	37	41	40	24	32	211
Prostitution.....	2	1						2	2				7
Rape.....	1	1	2			2		4	2				12
Resisting an officer.....		1		2		1	2	1	2	3	4	5	21
Robbery.....	1				4	6	3	2	1		1		18
Selling lottery tickets.....							1						1
Selling without license.....	5	8	2	1	11	5	3	2	6	3	3	3	52
Selling adulterated liquor.....								2	9				11
Seduction.....								1	1				2
Slander.....	1				1				1		1	2	6
Smuggling.....					1								1
Sodomy.....	1			1			1	1					4
Stolen property in possession.....	3			1	1					3			8
Suspicious characters.....	2	5	10	5	2	3	5	14	5	4			55
Threats.....	1	2						3	2		2	5	15
Trespassing.....	2	6	2	3	10	25	15	9	14	19	102	92	299
Vagrancy.....	13	13	8	16	11	19	9	8	15	69	37	26	244
Violation of municipal laws.....					2	2							4
Violation of immigration laws.....								9					9
Violating internal-revenue laws.....	1							3	8				12
Violating liquor laws.....												1	1
Violating police regulations.....	4	6		3	5								18
Violating postal laws.....					1			1					2
Violating sanitary regulations.....	39	37	44	32	20	37	37	51	65	56	71	95	584
Violating water laws.....								1					1
Total.....													4,254

GEO. R. SHANTON,
Chief of Police.
D. E. McDONALD,
Chief Clerk.

HEADQUARTERS POLICE DEPARTMENT, October 29, 1906.

APPENDIX 7.—MUNICIPAL STATISTICS.

TABLE 41.—Comparative statement of the municipalities of the Canal Zone, for the years ending October 31, 1905 and 1906.

REVENUES.^a

Municipality.	Real estate tax.		Rentals.		Liquor licenses.		Slaughter tax.		Other taxes.		Fines and costs.		Total.	
	1906.	1905.	1906.	1905.	1906.	1905.	1906.	1905.	1906.	1905.	1906.	1905.	1906.	1905.
Ancon.	\$3,564.81	\$890.75	\$1,522.00	\$31.00	\$12,800.00	\$7,913.50	\$124.50	\$6,568.42	\$3,730.61	\$5,612.90	\$3,891.77	\$30,284.13	\$16,582.13	
Empire.	2,033.02	1,512.72	5,253.64	740.94	50,556.10	24,835.50	14,136.30	9,054.70	17,234.25	7,644.85	10,333.80	5,190.00	46,607.11	46,978.71
Gorgona.	5,487.26	3,019.15	4,911.93	1,515.85	15,193.32	9,112.00	5,906.50	3,892.00	9,690.76	6,092.10	6,375.60	1,959.80	47,545.37	25,580.90
Buenavista	1,449.14	1,153.75	511.90	2,906.00	5,961.50	1,040.50	1,028.10	4,101.50	3,886.20	1,926.80	6,337.30	15,590.44	9,624.35	
Cristobal.	2,656.28	3,108.40	7,550.00	4,065.10	3,741.40	2,784.00	8,168.06	3,403.73	6,458.20	3,711.25	31,682.34	13,964.08		
Total.	15,220.51	6,576.37	15,306.97	2,287.79	92,060.92	48,632.10	25,909.70	16,883.30	45,763.99	24,770.49	30,767.30	15,390.12	224,729.39	114,740.17

EXPENDITURES.^a

Municipality.	Government.		Public works.		Justice.		Schools.		Indigent.		Total.		
	1906.	1905.	1906.	1905.	1906.	1905.	1906.	1905.	1906.	1905.	1906.	1905.	
Ancon.	\$9,572.54	\$5,136.55	\$3,911.13	\$88.00	\$3,504.62	\$2,806.38	\$116.65	\$2,365.50	\$280.70	\$149.63	\$17,248.99	\$8,180.56	
Empire.	14,512.01	7,415.44	41,664.86	1,872.45	5,952.18	3,742.77	1,223.10	1,068.75	352.20	148.55	62,567.90	16,544.71	
Gorgona.	10,984.46	4,171.35	17,367.71	3,350.11	2,955.70	1,223.10	344.26	1,088.75	248.02	230.04	31,002.15	10,703.35	
Buenavista	4,924.71	3,118.35	3,786.61	17.45	2,662.79	888.75	108.00	180.00	168.70	62.00	11,710.81	4,267.15	
Cristobal.	10,225.00	5,533.94	6,452.65	389.15	1,690.30	1,767.60	441.55	1,123.86	15.60	25.80	18,825.10	8,790.35	
Total.	49,320.72	25,375.63	73,182.96	5,667.16	16,765.59	11,028.60	1,070.46	4,738.11	1,045.22	676.62	141,384.95	47,486.12	

^a Panamanian silver.

TABLE 41.—Comparative statement of municipalities of the Canal Zone, for the years ending October 31, 1905 and 1906—Continued.

CASH BALANCE, OCTOBER 31.^a

	1906.	1905.
Ancon.....	\$21,436.71	\$8,401.57
Empire.....	70,443.21	33,434.00
Corgona.....	31,450.77	14,887.55
Buenavista.....	9,236.83	5,357.20
Cristobal.....	18,030.97	5,173.73
Total.....	150,598.49	67,254.05

^a Panamanian silver.

SUMMARY.

	1906.	1905.
Total receipts ^a	\$224,729.39	\$114,740.17
Total expenditures ^a	141,384.95	47,496.12
Total cash balance ^a	150,398.49	67,254.05

^a Panamanian silver.

NOTE.—In preceding figures in expenditures on account of public works classification may be made as follows:

Repairs to buildings.....	\$15,527.05
Construction of buildings.....	44,876.76
Roads and bridges.....	15,320.00
Public lighting.....	2,800.00
Ferry at Gatun.....	326.31

^a 78,850.12

In school account figures represent teachers' salaries only, and these have been paid from Canal Zone funds since February, 1906, when the Municipal Schools were transferred to the Division of Schools.

Respectfully submitted

RUFUS A. LANE,
Chief Bureau of Municipalities.

ANCON, CANAL ZONE, November 8, 1906.

APPENDIX 8.—Translation of decree No. 118 of the President of Panama September 22, 1906, relative to the procedure for the extradition of fugitives from the justice of the Canal Zone.

The President of the Republic of Panama, by virtue of the authority with which he is invested, and, considering that, in view of the urgent necessity of adopting prompt and efficient means to give effect to the provisions of article 16 of the treaty of the 18th of November, 1903, the Governor of the Canal Zone has promulgated an Executive order dated September 19, 1906, relative to the apprehension and delivery to the authorities of the Republic of Panama of fugitives from the justice of that Republic who seek refuge in the territory of the Canal Zone, hereby decrees that:

ARTICLE 1. All persons who have been convicted, prosecuted, or accused before the courts of the Canal Zone as authors or accomplices of crimes, transgressions, or offenses against the laws of said Zone, and who seek refuge in the Republic of Panama, shall be, upon apprehension, taken into custody by the authorities of the Republic and delivered to the authorities of the Canal Zone in compliance with the procedure hereinafter established.

ART. 2. When the Government of the Canal Zone shall request the extradition of a fugitive from the justice of the Zone who is a citizen of Panama, the Government of the Republic may decline to comply with said request.

^a Panamanian silver.

ART. 3. If the person whose arrest and delivery is requested should be accused of, or under sentence for, any crime, transgression, or offense committed in the Republic of Panama, he shall not be delivered to the authorities of the Canal Zone until he shall have been acquitted, pardoned, or served his sentence pursuant to the laws of the Republic of Panama.

ART. 4. If, in the course of proceedings against a fugitive from the justice of the Canal Zone it should appear that probable cause exists for believing that the delinquent is guilty of another offense against the laws of the Republic distinct from that which gave rise to the request for his apprehension and delivery, the Government of Panama may prosecute said fugitive for such offense, after notice is given to that effect to the Government of the Canal Zone.

ART. 5. The demand for the arrest and delivery of a fugitive from the justice of the Canal Zone will be complied with when made in writing and signed by the Governor of the Canal Zone or his duly authorized representative, and addrest to the Secretary of Government and Foreign Relations of the Republic of Panama. If the request made is for a convicted fugitive, it must be accompanied by a duly certified copy of the sentence pronounced by the competent court, and, if possible, a description of the fugitive.

ART. 6. In case of urgency, where there are reasonable grounds to fear that the fugitive may avoid apprehension, his detention may be asked for by telegraph. The arrest and detention shall be accomplished in the manner prescribed by the laws of the Republic, and detentions authorized by this decree shall continue not more than fifteen days, during which time the request for the delivery of said fugitive must be made.

ART. 7. For the purpose of accomplishing the delivery of the fugitives apprehended in pursuance of this decree, the Government of the Republic of Panama will deliver them to the duly authorized agent or agents of the Government of the Zone, but said agent's actions and authority shall be limited to receiving the fugitive at the place of delivery, whence return shall be made to the territory of the Zone, and to exercising the necessary vigilance to prevent escape of the person in custody.

ART. 8. It is the duty of the authorities of the Republic of Panama along the line of transit to provide the person or persons charged with the delivery of fugitives, with all the means necessary to prevent escape and to remove all unlawful obstacles that may hinder or delay the return of such fugitive to the territory of the Canal Zone.

ART. 9. All papers and other articles which are in the possession of the fugitive at the time of his detention and that have relation to the crime, transgression, or offense for which the fugitive is convicted or charged, shall be given up to the Government of the Canal Zone. These papers and articles shall be reclaimed after the termination of the case if there are third parties who prove a right to or over them. The authorities of the Republic, however, may provisionally retain said articles and papers so long as they are required for use as evidence in some other case pending or contemplated in the courts of the Republic, whether such case be related or not to the one which called for the apprehension and return of the fugitive.

ART. 10. The expense of capture, detention, and transportation of a fugitive from the justice of the Canal Zone shall be paid by the

Government of said Zone, but such expense shall not include compensation for the service of the judiciary or police authorities of the Republic of Panama, except those judicial or other officers whom the laws of the Republic authorize to receive fees for their services.

Let the above be published and enforced.

Done at Panama on the 22d day of September, 1906.

(Signed) M. AMADOR GUERRERO,

(Signed) RICARDO ALIAS,

Secretary of Government and Foreign Relations.

The foregoing is a copy.

[SEAL.]

(Signed)

R. J. ALFARO,

Subsecretary.

APPENDIX 9.—Executive order of the Governor of the Canal Zone, September 19, 1906, relative to procedure for the extradition of fugitives from the justice of the Republic of Panama.

EXECUTIVE ORDER.

GOVERNMENT OF THE CANAL ZONE,

EXECUTIVE OFFICE,

Ancon, September 19, 1906.

By the authority of the President of the United States, and upon direction of the Secretary of War: Whereas Article XVI of the treaty between the Republic of Panama and the United States, signed at Washington, November 18, 1904, stipulates as follows:

The two governments shall make adequate provision by future agreement for the pursuit, capture, imprisonment, detention, and delivery within said Zone and auxiliary lands to the authorities of the Republic of Panama of persons charged with the commitment of crimes, felonies, or misdemeanors without said Zone, and for the pursuit, capture, imprisonment, detention, and delivery without said Zone to the authorities of the United States of persons charged with the commitment of crimes, felonies, and misdemeanors within said Zone and auxiliary lands;

And whereas an urgent necessity exists for carrying out said stipulation, it is hereby ordered:

1. That all persons who have been condemned, prosecuted, or accused before the courts of the Republic of Panama as authors or accomplices of crimes, transgressions, or offenses against the laws of said Republic, and who seek refuge in the Canal Zone, shall be, upon apprehension, taken into custody by the authorities of the Canal Zone and delivered to the authorities of the Republic of Panama upon the demand of the Government of that Republic, and compliance with the procedure hereinafter prescribed.

2. The Government of the Canal Zone is at liberty to decline compliance with a demand of the Government of the Republic of Panama for the arrest and delivery to the authorities of said Republic of a fugitive from the justice of the Republic of Panama when said fugitive is a citizen of the United States. The discretion hereby reserved shall be exercised by the Governor of the Canal Zone.

3. If the person whose arrest and delivery is demanded should be accused of, or under sentence for, any crime, transgression, or offense committed in the Canal Zone, he shall not be delivered to the authorities of the Republic of Panama until he has been acquitted, pardoned,

or undergone his sentence pursuant to the provisions of the laws of the Canal Zone.

4. If, in the course of the proceedings in the courts of the Republic of Panama, in the case to which the arrest and delivery appertain, it should appear that probable cause exists for believing the delinquent guilty of another and graver offense against the laws of the Republic of Panama than that which gave rise to the request for his apprehension and delivery, the Government of that Republic may prosecute said fugitive for such other offense after notice to that effect to the Government of the Canal Zone.

5. The demand for the arrest and delivery of a fugitive from the justice of the Republic of Panama, pursuant to the terms of this order will be complied with when made in writing and signed by the Secretary of State in the Department of Government and Foreign Relations of the Republic of Panama, or by his direction, and presented to the Governor of the Canal Zone. If the demand is for a condemned and fugitive criminal it must be accompanied by a duly certified copy of sentence pronounced by a court of competent jurisdiction, and, as far as possible, a description of the fugitive sought to be reclaimed.

6. In case of urgency, where there are reasonable grounds for fearing that the fugitive may avoid apprehension, his detention may be asked for by telegraph. The arrest and detention shall be accomplished in the manner and by the officials prescribed by the laws of the Canal Zone, and detentions authorized by this order shall not continue longer than fifteen days, during which the procedure for securing the delivery of said fugitive to the authorities of the Republic of Panama shall be completed.

7. For the purpose of accomplishing the delivery of the fugitives apprehended and delivered in pursuance of this order, the Republic of Panama may send its agent or agents duly authorized to receive said fugitive, into the territory of the Canal Zone, but said agent's action and authority shall be limited to receiving such fugitive at the point of departure for return to the Republic of Panama and at the moment of departure, and thenceforth to exercise the necessary vigilance and restraint to prevent the escape of the person in custody.

8. It is hereby made the duty of the authorities of the Canal Zone on the line of transit to provide the person or persons charged with the conveyance of such fugitives so delivered, with all the means necessary to prevent escape and to remove all unlawful obstacles that may hinder or delay the return of such fugitives to the territory of the Republic of Panama.

9. All papers and other objects found in the possession of the fugitive at the time of his detention and that refer to the crime, transgression, or offense of which the fugitive is accused or convicted, shall be delivered to the Government of the Republic of Panama. These papers and objects must be restored after the conclusion of the case if there are third parties who assert a right to or over them. The authorities of the Government of the Canal Zone may provisionally retain said objects and papers so long as they are required for use as evidence in some other case pending or contemplated in the courts of the Canal Zone, whether such case be related or not to the case wherein the demand for the apprehension and return of the fugitive originated.

10. The expense of capture, detention, and transportation of a fugitive from the justice of the Republic of Panama shall be paid by that Republic, but such expenses shall not include compensation for the services of the judiciary, military, or police authorities of the Government of the Canal Zone, excepting the services of judicial or other officers of the Government of the Canal Zone whose compensation consists of fees; such officers shall be entitled to receive the amount prescribed by the laws of the Canal Zone as fees for their services in similar cases under said laws.

(Signed)

CHARLES E. MAGOON,
Governor of the Canal Zone.

APPENDIX 10.—*Abstract showing population of the Canal Zone on the Isthmus of Panama, taken March 8, 9, and 10, 1906.*

Station.	Color.	Number.	Total.
Culebra.....	Whites.....	677	4,801
	Blacks.....	3,966	
	Yellow.....	158	
Empire.....	Whites.....	380	2,303
	Blacks.....	1,834	
	Yellow.....	89	
Bas Obispo.....	Whites.....	149	1,179
	Blacks.....	785	
	Yellow.....	17	
Camp Elliott (U. S. Marine camp)	Whites.....	228	651
	Blacks.....	54	
	Yellow.....	580	
Matachin.....	Whites.....	17	1,218
	Blacks.....	402	
	Yellow.....	785	
Gorgona.....	Whites.....	21	87
	Blacks.....	402	
	Yellow.....	785	
Haut Obispo.....	Whites.....	66	663
	Blacks.....	18	
	Yellow.....	3	
Las Cascadas.....	Whites.....	26	773
	Blacks.....	605	
	Yellow.....	32	
Gatun.....	Whites.....	29	1,555
	Blacks.....	723	
	Yellow.....	21	
Ancon.....	Whites.....	244	1,076
	Blacks.....	1,311	
	Yellow.....	29	
Paraiso.....	Whites.....	156	254
	Blacks.....	891	
	Yellow.....	29	
Frijoles.....	Whites.....	4	354
	Blacks.....	250	
	Yellow.....	25	
Tabernilla.....	Whites.....	321	825
	Blacks.....	8	
	Yellow.....	42	
Bohio.....	Whites.....	768	105
	Blacks.....	15	
	Yellow.....	42	
Buena Vista.....	Blacks.....	105	291
	Whites.....	6	
	Blacks.....	273	
Cucaracha.....	Yellow.....	12	

APPENDIX 10.—Abstract showing population of the Canal Zone on the Isthmus of Panama, taken March 8, 9, and 10, 1906—Continued.

Station.	Color.	Number.	Total.
Pedro Miguel.....	Whites.....	79	
	Blacks.....	652	
	Yellow.....	23	
Miraflores.....	Whites.....	23	754
	Blacks.....	128	
San Pablo.....	Whites.....	8	151
	Blacks.....	309	
	Yellow.....	7	
Corozal.....	Whites.....	156	324
	Blacks.....	405	
La Boca.....	Whites.....	166	561
	Blacks.....	1,071	
	Yellow.....	48	
Mount Hope.....	Whites.....	35	1,285
	Blacks.....	865	
	Yellow.....	17	
Cristobal (Doctor Wheeler's figures).....			917
Total.....			2,010
			22,137

An addition of 5 or 10 per cent should be allowed for persons living in outlying districts who are indirectly connected with canal work.

APPENDIX 11.—Census of Panama.

The census of Panama has been completed, with the following result:

Total inhabitants.....	22,547	Males.....	7,049
Result of census October 31, 1905.	20,382	Females.....	6,410
	<hr/>	Minors.....	9,088
Increase.....	2,165	Males.....	4,016
	<hr/>	Females.....	5,072
Adults.....	13,459		

Nations are represented as follows:

America (United States).....	361	Holland.....	77
Argentina.....	8	Italy.....	245
Austria.....	4	India.....	2
Arabia.....	3	Jamaica.....	1,877
Belgium.....	6	Mexico.....	41
Bolivia.....	2	Nicaragua.....	17
Brazil.....	2	Peru.....	171
Colombia.....	869	Panama.....	15,110
China.....	708	Porto Rico.....	10
Costa Rica.....	55	Portugal.....	4
Chile.....	45	Russia.....	4
Cuba.....	91	Spain.....	1,140
Denmark.....	2	Scotland.....	3
England.....	112	Syria.....	5
Ecuador.....	74	Switzerland.....	5
Egypt.....	1	San Salvador.....	12
France.....	119	Turkey.....	1
Germany.....	22	Venezuela.....	68
Guatemala.....	7	West Indies.....	1,250
Greece.....	8		
Haiti	5	Total.....	22,547

APPENDIX 12.—*Census of Colon.*

Colon.....	10,265
Cristobal.....	2,010
Estimated number not included.....	500
Total.....	12,775

On account of the nomadic character of the population, it is virtually impossible to reach them all and it is fair to assume that 500 should be added to cover this estimate.—(Abstract from Doctor Wheeler's figures.)

APPENDIX 13.—*White Americans on the Isthmus as per census of April, 1906.*

Panama.....	361	Bas Obispo.....	92
Ancon.....	244	Marine Camp.....	228
La Boca.....	91	Gorgona.....	225
Corosal.....	156	Matachin.....	22
Miraflores.....	20	Tabernilla.....	20
Pedro Miguel.....	67	Bohio.....	19
Paraiso.....	119	Gatun.....	11
Cucaracha.....	6	Cristobal.....	489
Culebra.....	508	Colon.....	319
Empire.....	255		
Las Cascadas.....	12	Total.....	3,264

EXHIBIT B.

REPORT OF THE CHIEF ENGINEER.

ISTHMIAN CANAL COMMISSION,
DEPARTMENT OF CONSTRUCTION AND ENGINEERING,
Culebra, August 11, 1906.

SIR: I beg to submit the following report as covering operations of the various divisions of the department of engineering and construction for the year ending June 30, 1906.

COLON DIVISION.

This division extends from the Caribbean Sea to Bohio and for convenience is divided into two sections, the Cristobal section, covering all work from the sea to Mindi, and the Gatun section, covering all work between Mindi and Bohio.

The office of the division engineer has been maintained at Cristobal; all the clerical work and timekeeping for the division, and all the drafting and keeping of records, except the field sheets of the survey parties, has been done in the division office, and also the clerical work pertaining to the Chagres River division since February 20.

The general topographical surveys of the Cristobal section were completed in the previous year, and only such additional work of this nature has been done as was necessary to secure additional information for the Consulting Board of Engineers and filling out some small uncovered areas. A hydrographical survey of the inner harbor at Cristobal was made in June, 1905. This survey has been repeated three times at intervals during the year to show the progress made in dredging.

All the instrumental work necessary in laying out buildings, tracks, and other construction work and street lines and grades in Colon has been done.

Fifty additional borings have been made to determine the character of the material in the inner harbor and calculations on quantities have been made accordingly. A map showing the results of all surveys from Gatun to the sea has been made and traced. This map is based on a geodetic projection, latitude and longitude being obtained from observations made by the United States Coast Survey. A map in one sheet has been made showing the results of all surveys, except the later ones in the valley of the Gatun River and in the Chagres Valley between Bohio and Gatun.

Plans and specifications in detail for two sea-going suction dredges have been made, and after changes, plans and specifications were sent to the Washington office under date of June 29.

Plans have been in progress for a 20-inch pipe line dredge for excavating that part of the canal that can be handled by the hydraulic method.

At the beginning of the year the construction and repair of tracks in the vicinity of Cristobal, and the construction of wharves in the inner harbor, were under the direction of the division engineer, but on September 1 this work was all turned over to the Panama Railroad. During the months of July and August 5,210 feet of new track were laid, and 10,800 feet of old track repaired, surfaced, and partly ballasted. The wharf work was confined to dock No. 11; 23,271 linear feet of piling were driven, and 69,000 feet board measure of timber were put in place.

At the beginning of the year an old French dredge had been repaired and was engaged in deepening the channel in the inner harbor. At that time there was an available channel of about 20 feet in depth leading to wharf 11 and a depth of about 18 feet up to wharf 14. Dredging of this channel has continued thruout the year, with the exception of interruptions incident to such operations. The slip between piers 1 and 2 in Colon was dredged out three times, but up to December 1, 1905, the dredge was operated twelve hours per day and since that time twenty-four hours per day six days in a week.

A total of 866,500 cubic yards of material, scow measurement, was removed, of which 58,500 yards was coral rock, the remainder being mud and silt, and the cost per yard of the entire amount, including all labor, material, and running repairs, but not including depreciation of plant or administration expenses, was 8.9 cents. As a result of dredging operations there is now an available channel of 25 feet in depth from Cristobal Point to the dry dock slip above dock 14, a distance of about 1 mile.

The construction of a drainage ditch along D street in Colon having been found necessary, a clam shell bucket derrick dredge was constructed and put in operation about the middle of December, and since that time has been in continuous operation, excepting during the time required in moving.

A ditch about 10 feet wide and having a depth of 5 to 7 feet has been dug along the center of D street from Third street south to the end of Fourteenth street, then to the shore of Folk River, about 300 feet east of the Panama Railroad, the total length of this ditch being about 6,000 feet, of which 1,200 feet were excavated in solid coral rock.

After the completion of this ditch the dredge excavated a sump well at Eighth and D streets for the new sewer system of Colon, and on the 29th of May the excavation of a small drainage ditch was commenced along Third street in Colon. The operation of this dredge has been eminently satisfactory.

A small 16-inch suction dredge for rehandling and pumping material gotten out by other dredges and for dredging in soft material has been built of old material, excepting the engines and pumps. The machinery was installed and the dredge put into commission on June 6, and since that date, with the exception of the time required to retube the boilers, it has continued in operation without serious delay and has been filling material on the low ground east of and adjacent to the Panama Railroad, between Bolivar street and Folk River, this work occasioned for sanitary purposes and to fill the low ground which is

covered by shacks which are being removed preparatory to the erection of sanitary quarters.

Among other property received from the French Canal Company was a small dry dock, located about a mile up the canal from Cristobal Point. This dock has an available length of 190 feet and a width of 32 feet between gate walls, and with about 16 feet of water over the sills at ordinary high tide. There was, however, no machine shop in connection with this dock, but previously some old French machine tools had been assembled and housed under temporary sheds and were being used to make repairs to floating equipment in the dock.

During the year a machine shop 50 by 100 feet, with wood frame, corrugated iron roof, and concrete floor has been erected; also a blacksmith and woodworkers' shop of about the same size has been erected. A number of old French hand and machine tools, an engine and two boilers have been assembled, repaired, and put into use, and the following new machines have also been received and put into service: One 1,000-pound steam hammer, one 1,000-foot capacity air compressor, one band saw, one large power boiler rolls, one combined punch and shears, one 6-foot radial drill, one pipe and bolt machine, one 18-inch lathe, one 36-inch lathe, and a reasonably complete set of small tools, pneumatic hammers, drills, etc. At the same time this plant was being erected and tools being installed, the shop was kept in operation repairing floating plant.

Heavy and extensive repairs have been made to the three self-propelling barges. The hulls and machinery were in fairly good condition, but the woodwork was almost entirely gone. The hulls have been scraped and painted both inside and out and repaired when necessary. New hopper doors have been made thruout, new decks laid, and in fact the barges have been gone over completely, engines taken out and overhauled, condensers repaired, and the barges are now all in good condition, excepting the boilers, two of which will need renewing during the coming year.

Running repairs have been made on the French dredge, such as were currently required.

A 55-foot launch was built during the year, entirely of old material excepting the boiler, which launch is being used for light towing around the canal.

One old boiler was taken out of and a new one put in the steam lighter *La Valley*.

Repairs were made to the tug *Cristobal*, also to the Panama Government boat *Oriente*; and a new floating pile driver, which was built by the Panama Railroad and turned over to this division, has been completed and put into service. All small boats have been kept in repair and painted. New barges have been painted and hoppers put on two of them for carrying coal.

In February the material for six 300-ton cargo lighters for the Panama Railroad began arriving at Colon, and the erection of the same by this division has progressed since that time. One of them has been completed and launched; the second is 95 per cent completed, and the third is well along toward completion.

The tug *Cristobal*, which was purchased in New York by the Panama Railroad, was operated by this division until February 14, doing generally such commercial towing as was required in the harbor and towing coal and water to the dredge.

The steam lighter *La Valley* was operated by this division but a short time and then turned over to the Panama Railroad.

The tug *Gatun*, also purchased in New York, reached Cristobal June 16, crew put on her June 25, and she is now in general service.

Five new steel barges 25 by 75 feet and six steel barges 16 by 40 feet, with open holds for carrying water, have been received.

The supervision of the construction of a large cold-storage plant, laundry, and bakery at Cristobal, on account of the Panama Railroad, has been under the care of this division and the work of all the buildings and machinery is well along.

A contract was entered into with George W. Catt, of New York, in August for two dipper dredges, one intended for La Boca and one for Colon, these dredges to have 5-yard dippers and dredge to a depth of 40 feet, hulls of steel, 110 feet long, 38 feet wide, and 10 feet deep. One of them is being erected in Cristobal, the other erected in La Boca. The work of delivery of these dredges is badly delayed, and the entire contract can not be completed in the time specified.

A contract for the construction of two large seagoing dredges was let in June to the Maryland Steel Company, but at the end of the year work was not commenced and contract has been let for the construction of six steel dump barges.

The work on the Gatun section has been confined to surveys and the boring of test holes to determine the character of the material along the canal and in the vicinity of the proposed lock and dam at Gatun. Surveys of the main line of the old canal with borings were made between Gatun and Bohio and also north of Gatun.

Topographical surveys have been made in the vicinity of the proposed lock and dam and additional surveys made between Gatun and Mindi. Thirty-six test holes were put down along the axis of the dam, having a total depth of 25,000 feet, the deepest being 265 feet below the surface. One hundred and eight holes, having a total depth of 9,000 feet, were put down at the location of the proposed lock, about sixty of them having been extended to a depth of 60 feet below sea level. Thirty-two holes were put down on the site of the proposed spillway.

A survey party has been at work since January, in the valley of the Trinidad River, running contour lines and taking general topography.

CHAGRES RIVER DIVISION.

This division extends from Bas Obispo to Bohio, and the work done has been confined entirely to surveys. During the first months of the year these surveys were under the direction of the division engineer at Culebra. On November 1 the division was placed in charge of a division engineer, but the work was transferred to the division engineer of the Colon division on February 20.

During the previous year topographical surveys had been made of the Chagres Valley up to the 200-foot contour from about Gamboa to the head of the valley. During the present year the surveys have been continued over the divide between the upper Chagres and Gatun River valleys and down the Gatun River valley including all its branches.

This valley has been developed up to the 100-foot contour from the head of the valley down to a connection with the surveys in the vicin-

ity of Gatun, with the exception of a small area near the head of the Quebrada Ancha.

Topography and borings were also taken along the line of a proposed tunnel spillway between the proposed Gamboa Lake and the Gatun River valley.

The topography of the Chagres Valley on both sides of the canal and up to the 125-foot contour between Bas Obispo and Tabernilla has been taken, also the topography of the valley of the Mandigo south of Bas Obispo.

Topography of the valley north and east of the canal up to the 100-foot contour has been completed between Tabernilla and the Tiger Hills, and in the valley of the Rio Cano, but the latter is not quite completed, the total area covered by the topographical surveys of this division footing about 62 square miles.

In considering the extent of the territory covered it should be borne in mind that every foot of every line run has been cut out thru a dense tropical jungle, and during the rainy season, which continues during the greater part of the year, these surveyors are working in water from ankle to waist deep and are subsisted and quartered in temporary camps. Undoubtedly the engineers and their assistants employed on this particular work are laboring under more adverse and uncomfortable conditions than any other class of employees on the Isthmus, and much credit is due to them for the splendid progress in the work they have made.

CULEBRA DIVISION.

As has been indicated to you both by verbal and written reports from time to time, the work on this division, during the past year, has been almost entirely preparatory, no special attempt having been made to get out yardage, but rather to take out the barriers, so-called, which were left by the French at different points in the canal excavation, and to get the prism in shape by putting in tracks and doing other work so that a larger output could be handled once the type of canal was decided upon. The equipment trackage was completed and the necessary yards and dumping grounds arranged for.

Owing to the great delay in the decision as to the type of canal, which decision was not made until the end of the year, it was impracticable to locate permanent and well-arranged dumping grounds for taking care of the waste material. Owing also to the absence of proper equipment, which had not begun to arrive in quantities sufficient to make economical and rapid work practicable until the close of the year, operations were necessarily carried on by the use of the old rolling equipment which came to us from the French and which is altogether unsuitable for the work. Only a few small size modern dump cars were received by the close of the fiscal year, and many of these were necessarily used in hauling coal, crushed rock, brick, and other material, owing to the lack of equipment on the Panama Railroad, so that none of the new rolling equipment, quantities of which were ordered in September, was received in time to be of any practical benefit.

During the year the amount of material excavated from the canal prism was 1,500,000 cubic yards, at 79.5 cents per cubic yard, as against 742,000 cubic yards, at a cost of 58.6 cents per cubic yard, the previous year.

There are several reasons for the increase in cost, one being that during the previous year during the months of the dry season there were only 7.8 inches of rainfall, and during that time 60 per cent of the output for the year was taken out. During the same months of the past year there were 18.4 inches of rainfall, and only 54 per cent of the total output was taken out during that time.

Another important consideration is the fact that during the past year nearly 49 per cent of the material excavated was actually mined—that is, drilled and blasted—while during the previous year a little less than 13 per cent of the material excavated required drilling and blasting; in other words, soft material was moved during the preceding year, and hard, or above the average hardness, during the past year.

Another item of added expense is that during this year we have only worked eight hours per day, while during the entire previous year ten hours were worked per day, and while the hours per day have been decreased the wages have been increased from 25 to 50 per cent.

The general plan of work which has been done in the cut has been to shape the prism up, which was left in bad shape by the French, so that systemized trackage may afford room for the working of steam shovels, together with the necessary tracks connecting with yards established along the line of the Panama Railroad—in other words, to work out the proposition to a practical transportation standpoint, and not by piecemeal, as has been done.

At the beginning of the year there were 10 shovels erected and ready for work. At the close of the year we had 39 shovels complete, 300 western dump cars, and 560 40-foot flat cars, the dump cars and flat cars having been received late in the year.

At the beginning of the year there were in operation 35 miles of track, and of this amount only 15 miles were laid with American steel. During the year 40 miles of new track were completed and 11½ miles of old French, all the new and old track being laid with new American steel. There are now at present in good shape in the cut what may be termed 70 miles of new track in operation.

There has been built during the year a yard at Pedro Miguel of nine tracks, each 1,600 feet long, also a modern locomotive coaling plant, repair and other tracks necessary. There has been built at White House two yards, one of five tracks and one of four tracks, each 1,600 feet long, also a coaling plant erected, an engine house under construction, and other necessary facilities for the proper handling of work trains out of yards.

Great progress and improvement has been made in the excavating department. This was formerly known as the mining department, and for the first three or four months, until this section of the work could be properly organized, the steam shovels were delayed on account of the delay in drilling and blasting; but at the present time the work is being conducted so that not only is the drilling and blasting kept ahead of the shovels, but the mining has made a gain of 1,250,000 cubic yards; in other words, that much ahead of the shovels.

There were 585,007 pounds of explosives used during the year, of which 146,103 pounds were black powder and the balance dynamite.

Until the end of the year we had no modern locomotives and very little modern rolling stock, consequently the improvement for the

transportation department has not been very marked, but with the completion of the double track of the Panama Railroad, which is now well along, so that our trains will not be delayed in getting over the road to the dumping grounds, the cost of transportation can be reduced at least 50 per cent, and the transportation proposition, including the dumping of the material, is the greatest problem connected with the excavation of the Culebra cut.

Most of the material hauled out during the year has been taken to the old French dumps, for the reason formerly given—that it was impossible to properly locate and build well arranged permanent dumps until the type of canal was settled. However, several new dumps have lately been opened up, two at Miraflores, two at Pedro Miguel, one at Rio Grande, one at Mamei, one at Bas Obispo, one at Haut Obispo, and a very large one about 2 miles long at Tabernilla, but the facilities at none of these dumps have as yet been sufficiently extended, owing to the delay in deciding the type of the canal, to make them of any great use.

A large amount of material has been taken out for completing the filling for double tracking of the Panama Railroad, which work is still in progress.

All engineering work necessary to accumulate data for obtaining current monthly estimates for laying out dumping grounds for the purposes above mentioned has been well carried out. A large amount of cross sectioning necessary for the estimation of quantities has been carried forward.

A reorganization was made of the clerical force of the division, the work having been so consolidated as to effect a saving of about \$1,000 per month in office expenses.

At the close of the year, which was practically the same as the date of decision as to the type of the canal, the condition of the Culebra cut, as regarding the installation of shovels and the consequent large increase in the output of material, was generally satisfactory, with the exception of the providing of the necessary dumping grounds, which was badly delayed, as explained by reason of the delay in the decision as to the type of canal. It was hoped in December that by the end of the year at least forty shovels could be in operation; but this hope was not realized because of the unavoidable delays resulting directly from failure to reach an early decision as to type; such a result has not been possible and the great advantage of being able to do this preparatory work during the dry season was lost, throwing the work of providing dumping grounds into the very worst part of the wet season. This, however, was a condition which presumably could not have been avoided.

The installation of new machinery, equipment, plant of all kinds, installation of water, sewerage, and other municipal improvements, the construction and putting into service of quarters on this and on other divisions, is reported under the head of the respective divisions for all such improvements.

LA BOCA DIVISION.

This division extends from Pedro Miguel to Panama Harbor, and prior to August 10 was under the immediate charge of the division engineer at Cristobal, since that time it has been under the division engineer of the La Boca division.

The work carried out has consisted of surveys, operation of shipways, and machine shops, repairs to floating plant, and the operation of the dredge in the channel entrance at La Boca.

The survey work consisted of triangulation, topographical and hydrographical surveys, borings, and the obtaining of physical data.

The repairs to floating equipment consisted of repairs made to the dredge and its attending plant; repairs to the self-propelling dump scows and launches to be used in connection with the new dredge, and repairs to the floating equipment belonging to the Panama Railroad.

Under surveys, all the old French triangulation stations have been reestablished and permanently marked. Angles from same have been observed, reduced, and plotted. A number of new triangulation stations, both primary and secondary, were established and date properly recorded. A complete system of triangulation now extends from Pedro Miguel to Naos Island and points surrounding the Bay of Panama.

A check base line, 4,380 feet long, has been measured and triangulation stations established at both ends of the base line and angles observed from same, and a series of observations were made on Polaris at triangulation station at Sosa Low, and the latitude of this point has been carefully determined.

Topographical surveys were made of the lock and the several dam sites proposed by the minority of the consulting board of engineers. A detailed survey showing the contours was made of the territory south of the Panama Railroad, from Panama to La Boca. An accurate survey was made of the Panama Railroad, which was used as a base line for obtaining the topography to the east of the Rio Grande Valley. The 75-foot contour on the east side of the valley from Diablo Hill to Pedro Miguel, including the valleys of the Cardenas and Caimitillo rivers, was traversed and plotted, and altogether detailed topographical surveys were made of nearly all the entire valley of the Rio Grande up to the 75-foot contour. The axis of the French canal plan was surveyed and cross lines at intervals of 400 feet were cleared and traversed for a distance of about 1,000 feet on each side. A detailed survey was made of the village of La Boca, including the Panama Railroad yard. Surveys for drainage ditches were made at different points. All bench lines were checked up and bench marks established in connection with the Culebra division.

A survey of the Bay of Panama was made extending from La Boca pier to the 40-foot contour and from beyond Panama City to Tortola Island.

About 175 miles of sounding lines were run and 40,000 soundings were made, and a complete map of the bay is now in progress. Beginning with the month of August, 1905, a monthly survey has been made of the channel from the La Boca wharf to deep water in the bay, such survey having been found necessary to obtain current data as to the depth and width of the ship channel maintained.

Borings to a large number have been made on the proposed sites of the Ancon-Corozal, Ancon-Sosa, and La Boca dams and from Sosa Hill to Far Fan Point, also along the proposed sea-level canal line from kilometer 64 to kilometer 74. Borings were also made along the French axis of the canal and at different places in the valley, in order to obtain accurate information as to the necessary

geological formations, and several boring outfits are now at work to obtain additional data between La Boca and Miraflores. A total of 123 holes were driven during the year and extended to rock.

In October a party was organized and commenced obtaining the direction and velocity of the surface currents in the Bay of Panama. Daily eight-hour records, excepting Sundays and holidays, have been kept, and this data is still being obtained. Tide gages were established, and daily records were obtained by observers stationed there, until March, at which time several self-registering gages were installed. Complete twenty-four-hour records have been kept. Daily rainfall records have been kept and notes sent to the division of meteorology and river hydraulics.

Tracings were made of a number of French maps of the La Boca division, and all office plotting, engineer, and office work has been kept up to current dates.

A great amount of miscellaneous work in the accumulation of data and of fixing boundary lines has been accomplished.

Many surveys have been made for many purposes, and altogether the engineering work of this division has been kept fully up to date, and much available data accumulated for use in the future.

During the year heavy repairs were made to floating plant. All dump scows have been placed in good condition, this taking an immense amount of work, in order to provide attendant scows for the use of the dredge, which has been constantly at work, and also to place scows in first-class condition to be used when the new dipper dredge, which is now under contract, is installed.

An old repaired French dredge was in service during the whole year, with the exception of about three weeks, when it was disabled. Extensive repairs were made necessary to keep the dredge in proper working order.

Some old French barge sections were repaired, and two coal lighters have been constructed during the year.

A steam launch was completed for the department of government.

Another steam launch was temporarily repaired and put into commission as a tender at the ship ways and pump boat in connection with the French floating equipment. This launch was, however, thrown out of service as being of no value and another steam launch, which was on the ways at the beginning of the year, was completed and put into commission.

Launches used by the engineering department in its necessary work, also by the quarantine department, have been fitted up and put into service. Heavy repairs were made to the boat used by the quarantine department for the use of fumigating ships, and the boat was turned over to that department.

All small boats, some fifteen whale boats, and others of smaller description, have been built or repaired for use in connection with dredging plant, survey parties, and dredging equipment.

Considerable work has been done in the shops for the dredge and attending plant of the Colon division.

The buoys to mark the entrance channel to La Boca have been painted, repaired, and replaced.

Heavy repairs have been made to the floating equipment belonging to the Panama Railroad, two coal lighters and six cargo lighters. Some of the latter having been practically rebuilt.

The necessary repairs have been made to the railroad company's harbor boat, machinery overhauled, and the boat has been put in first-class shape.

A number of minor repairs were made to the electric-light plant, to the electric and steam cranes on the La Boca docks, to the water service, and some of the steam shovels.

Extensive work was done to the ship ways, in the way of enlarging the plant. A new carpenter shop, boiler shops, and boilermakers' shop were constructed during the year. A new battery of boilers was installed; two new engines, a combined punch and shears, a 6-foot radial drill, a set of 10-foot rolls, a new circular saw, a car sill and timber dressing machine, a new band saw, a new blower, and new forges have been installed. A condenser having a capacity of 1,000 feet of air has been installed at the ship ways.

The small boiler and engine used in operating the machine shop have been removed and a new battery of boilers and engine were installed. A boiler shed and blacksmith shop have been added. In the blacksmith shop there has been installed six new forges and one new steam hammer. In the machine shop proper the shafting has been overhauled, a new pipe cutting and threading machine, a small lathe and emery grinder have been installed and put in service, all of the above necessitating much work in the way of concrete foundations for the various machines and boilers. Roofs and other parts of these buildings have been thoroly repaired and painted and with a few more additions to the present equipment, it is believed, the La Boca plant will be capable of making all the repairs to the floating equipment that will be necessary to use on this division during the construction of the canal.

All the plant and machinery on this division have been properly cared for during the period, as well as the old French floating equipment which is lying at anchor or sunken in the Rio Grande River above La Boca.

Minor repairs were made for the material and supplies department, work of installing fire line service in the lumber yard, installing an engine and boiler in a whaleboat, and repairing various cranes for use in the lumber yards. Repairs were also made for other divisions as to rock crushers, cutting and threading pipe, etc., and some repairs have also been made to steamships arriving at this port.

The work of dredging in the canal entrance east of the Panama railroad wharf and the sea, widening and deepening the channel, has gone on, and on August 1 it became necessary to dredge the basin along the Panama Railroad wharf. At that time there was about 18 feet at spring low tide. This dredging was completed on September 21, at which time there was a depth of 27 feet along this wharf and a width of 150 feet.

Heavy repairs were necessary, on several occasions, to the old French dredge, which is the only one we have at work and will have until the new one, which is under contract, will be completed.

During the year the dredge has been employed 60 per cent of the total time in actual dredging, about 9 per cent of the time was consumed in repairs and the balance of the time is chargeable to Sundays, holidays, passing ships, storms, and placing of plant. About 1,200,000 cubic yards of material were dredged during the year at a cost of 10 cents per cubic yard, including all repairs and renewals.

During the early part of the year work on this division was seriously handicapped on account of the shortage of labor and material. Also about this time a case of bubonic plague developed here and quarantine was installed. A large per cent of mechanics and laborers used in the shops and on dredges lived in Panama and, of course, did not return to work. The health conditions during the early part of this year at La Boca were very unsatisfactory, but since that time better quarters have been built, sewerage and water installed, the place has been cleaned up and the health of the employees has greatly improved.

DIVISION OF MUNICIPAL ENGINEERING.

PANAMA WATERWORKS.

On the 4th of July during the fiscal year, the mains having been laid in the principal streets, water from Rio Grande reservoir was turned into the city. From that date to the present time that city has received its water supply from the Rio Grande reservoir.

To date there has been laid a total of 48,595 feet of cast-iron water pipe, of which 30,576 feet were placed during the year, in dimensions from 4 to 20 inches, as follows: 4-inch pipe, 629 feet; 6-inch pipe, 36,402 feet; 8-inch pipe, 5,381 feet; 10-inch pipe, 1,444 feet; 12-inch pipe, 1,443 feet; 16-inch pipe, 1,236 feet; 20-inch pipe, 2,060 feet.

There has been very little complaint on account of the water furnished to Panama during the year. The system and reservoir being new, there was a noticeable taste to the water, but this has practically disappeared, and the use of the water by the inhabitants has become nearly universal. Since the installation of the water service two serious fires have occurred in the city, and the reservoir capacity and pressure have proved ample for fire protection, the saving of the city from destruction, being undoubtedly due to this service. With the inauguration of water into the city, service connections to the various houses were started, and up to the present time 1,305 houses have been connected, and 78 fire hydrants have been placed. There have also been installed 5 cranes for the use of watering carts.

PANAMA SEWERS.

The sewerage system in the city of Panama is 98 per cent completed, there being a total of 54,007 linear feet of sewer pipe laid, of which 39,981 feet were laid during the year. The sewers consist of pipe of various sizes from 6 to 24 inches, and the following has been laid: 6-inch pipe, 1,275 feet; 8-inch pipe, 27,093 feet; 12-inch pipe, 14,924 feet; 15-inch pipe, 5,035 feet; 16-inch pipe, 127 feet; 18-inch pipe, 4,973 feet; 24-inch pipe, 580 feet.

There have been built on this system 158 manholes, 157 storm water inlets, and 1,305 house connections have been made. The outfalls for the sewerage systems have been completed, and there remains to be laid the sewers in only three short streets in the vicinity of the market.

House connections were made on the streets before the paving was commenced, to prevent the cutting of the pavement for this work

afterwards. The dry weather flow in the sewers has proved in all cases sufficient to keep them clean without the use of flush tanks, which were originally contemplated.

The concrete work for Ancon reservoir was completed; 1,430 cubic yards of concrete having been used on the work, and the reservoir was put in use on November 1, the same having a capacity of 1,000,000 gallons and being so constructed that water can be received into Panama thru a by-pass direct from the Rio Grande reservoir, about 10 miles distant.

PANAMA PAVING.

The paving of the city of Panama was authorized by the Commission in July, 1905. On September 1, some preliminary work on Central avenue was commenced in the vicinity of the Panama Railroad station, and ground was leased on Central avenue for a yard, for the purpose of storing rock, sand, and brick.

There has been a great deal of delay, owing to lack of material in the shape of cement and paving brick, and the real work of paving the streets was not begun until early in March, and since that time all of the principal streets of Panama have been thoroly paved with a first-class variety of paving brick, laid on concrete foundations, and during that time, or up to June 30, there has been laid 39,955 square yards of brick pavement, leaving about 26,100 square yards yet to be laid.

Twenty streets, most of which are short and unimportant, are not to be brick paved, but macadamized, and this latter work will commence in the immediate future.

At the beginning of the rainy season it was deemed best to cut down the large paving gangs because of the narrow streets, it not being advisable to tear up more than could be completed between storms. This delayed the work somewhat, but still fair progress has been made thruout every month since the inauguration of the work, and to-day it is believed that beyond question the city of Panama is the best paved, watered, and seweried city in Central America or the northern half of South America.

The construction of the wagon roads across the Sabanas is practically completed; these roads being entirely regraded and heavily macadamized, are in first-class shape, all having been provided with permanent openings to take care of the drainage, some of the culverts being of 25-foot spans, all being of first-class concrete construction, there being nearly 8 miles of such road construction.

The water supply for Ancon Hospital and vicinity, as originally installed, came from old French wells on the hospital grounds, but with the beginning of the delivery of water to Panama from the Rio Grande reservoir, these were changed as rapidly as possible, new mains having been laid thruout the entire Ancon reservation, there being at the present time 8,753 feet of 4, 6, and 8 inch water pipe, all houses, hospitals, etc., along these mains having been connected up.

A high-service system, to give ample pressure for fire protection, has already been installed, and is almost ready for operation. It is expected to begin shortly to serve water from this system, which consists of a steel standpipe on Ancon Hill, having a capacity of 50,000 gallons, and two duplex pumps, pumping to this standpipe

from the Ancon reservoir proper, together with all the necessary boiler house, pump house, steam and water mains, etc. In all houses connected with the high-service system reducing valves are being placed, so as to give uniform pressure at all points.

Within the Ancon section, so called, and connecting with the Panama city laterals, there has been laid during the past year 7,840 feet of sewer pipe of 4, 6, and 8 inch dimensions, and all houses along these sewers have been connected with same.

During the year the roads thruout the Ancon Hospital grounds and the section have been kept in good shape, but no permanent repairs or paving have been done, for the reason that the large amount of trenching being done, necessary for the installation of sewer and water pipe, has prevented this; but it is expected in the immediate future, now that the other improvements are completed, to pave and otherwise take proper care of these streets.

The town of La Boca has been connected with the Rio Grande reservoir system by a 6-inch cast-iron main, there having been laid to date from the Rio Grande supply about 14,000 feet of 6 and 8 inch water pipe.

Thirty-one house connections have been made at La Boca, and the fire service is installed in the new dock at that point.

A sewerage system for La Boca was designed and authorized, the work being started in February. There have been laid 2,657 feet of 4, 6, and 8 inch pipe, running to the outfall near the railroad pier. Nine concrete manholes have been constructed and 34 house connections have been made.

On the island of Taboga, where is located the sanitarium connected with the department of sanitation, a water supply was authorized and a 3-inch pipe line laid from the intake creek near the town. Two 15,000-gallon tanks have been placed at an elevation of 40 feet above the sanitarium. From these tanks a 3-inch service pipe has been laid to the building and 4 fire hydrants installed. The work is practically completed, but on account of some legal questions entering into the right to use the water there has been some delay.

This is now in line of settlement, and it is expected soon to be able to complete the work.

At Corozal the water is taken from the Rio Grande main. There have been laid 2,985 feet of cast-iron water pipe, from 3 to 6 inches in diameter, of which 1,600 feet were laid previous to June, 1905. Hydrants for fire protection have been placed around the hotel and in the town, and the system, as far as is at present necessary, is completed.

The work on the sewers at Corozal was started July 7, and to-day 4,018 feet of vitrified pipe have been laid and 17 manholes constructed, all house connections having been made, and the work, as far as is at present necessary, has been completed.

Good and sufficient repairs have been made in order to place the wagon road between Panama and Corozal in use, and it is now in a fairly passable condition.

At Miraflores the old French system of waterworks is still in use, with the exception that connection is now made and the water supply is now obtained from the Rio Grande pipe line.

At Pedro Miguel work was started on the water supply on August 26, and 1,644 feet of water pipe has been laid. Six hose valves have been placed for fire protection, and the water system is finished and all house connections have been made that are required at the present time.

The sewerage system consists of 1,785 feet of 4, 6, and 8 inch pipe and 20 manholes, and the sewerage system for the buildings now erected is completed; but additional buildings will, of course, require an extension of the sewerage plant, plans for which are now in course of preparation.

At Paraiso the water supply is taken from the Rio Grande pipe line, passing thru about 500 feet of 4-inch cast-iron pipe; and 5,456 feet of pipe line, 4 and 6 inches in size, has been laid in and around the town, and water was turned into this on May 4, 1906, and all house connections are now being made.

There has been laid at Paraiso, 1,950 feet of sewer pipe, 4 manholes constructed, and all houses adjoining these sewers have been connected.

At Cucaracha, 2,000 feet of 2-inch galvanized-iron water pipe was laid to the laborers' camps in this village.

At the Rio Grande reservoir the work of strengthening the dam continued practically thru the year. This has been done by building two additional buttress piers and a spillway and extending the waste pipe thru the gorge below the dam, and trenches have been dug to divert all water above these works from entering the reservoir.

The work of filling below the dam has been begun, in order to strengthen that structure, and 4,000 feet of pipe line, which is of 20-inch galvanized-iron pipe, has been concreted, making walls 6 inches thick surrounding the same.

On December 6 the Rio Grande reservoir was at its highest, being 234.4 feet in elevation, and on April 15 at its lowest, 228.64 feet, being a fall of 5.76 feet during the dry season—equivalent to 65,700,000 gallons over and above the inflow during that period. In other words, there was used during the dry period about 56,000,000 gallons of water for the use of the various towns and camps which draw their water supply from this reservoir, including the city of Panama, and at the end of the dry season there was still fully a year's supply in the reservoir, which shows that unless Panama grows very rapidly and its use of water increases far beyond all expectations that there is an ample supply of water in the Rio Grande reservoir for all purposes.

At Culebra much of the old French water supply has been cut out and a new system laid, constructed of from 2 to 8 inch cast-iron pipe, of which about 12,000 feet has been laid; all houses have been connected with the same, and the system has been extended to meet the constantly growing condition of quarters and office buildings.

In order to give fire protection, a new reservoir has been excavated on top of Mount Zion Hill, having a capacity of 500,000 gallons. This reservoir is excavated in natural ground, and the sides of same thoroly riprapped, but the work of rendering it water-tight has been postponed until the next dry season, as the use of the small concrete reservoir will, for the time being, take care of the situation.

The water supply for the Culebra distributing reservoir is obtained by pumping from the Rio Grande pipe line to Cucaracha, and by a second lift, by means of pumps, at Rio Grande.

The Culebra Hotel has been protected from fire by 8 standpipes, and there are 6 fire hydrants for the protection of other buildings in the town.

A fairly complete system of sewers of a total length of 7,400 feet has been laid in the vicinity of Culebra, and 88 house connections have been made to the same, but a part of the old town remains to be sewerized, which will be undertaken immediately.

About 1 mile of macadam road between the new employees' quarters and the headquarters building of the department of construction and engineering and the Panama Railroad station has been completed, requiring the construction of 12 concrete culverts. About one-half mile of cinder paths have been graded and completed, and a large amount of grading has been done by this division in the vicinity of the hospital building.

At Comacho the old French water-supply system has been improved and enlarged, 1,900 feet of different sized water pipe has been laid, and two additional tanks have been built on the hill at Comacho to give the necessary fire protection, and a pump and distilling plant has been installed.

On the east side of the canal opposite Comacho, at a point called Lirio, a pumping system to supply water to locomotives of the Culebra division has been installed, and, in fact, thruout the entire length of the Culebra division at many proper points water cranes, with the necessary distributing mains, have been established for the same purpose.

In the sewerage system at Comacho there has been laid 7,818 feet of sewer pipe, and 60 houses have been connected up with same to date. About one-half mile of road is under construction at the same point.

Work on the Comacho dam, to afford a permanent water supply for Comacho and vicinity, was started in August, and is now well toward completion. This reservoir will contain about 275,000,000 gallons, and, being located in a valley with streams running into it nearly all the year, it is believed that the supply will be ample for all locomotives, steam shovels, and domestic uses that this reservoir will be called upon to supply in the vicinity.

It may be said, however, that the Comacho and Rio Grande reservoirs are so connected that their use is interchangeable; in other words, should an emergency arise requiring it, the water from Comacho reservoir can be sent thru the Rio Grande mains to the city of Panama, or the water from the Rio Grande reservoir can be handled thru the mains of the Comacho system to the towns of Culebra, Empire, and Comacho.

In the work of construction of the Comacho dam there has been to date about 34,000 cubic yards of embankment completed, and in the construction of a core wall, screen chambers, and waste culverts 1,750 cubic yards of concrete filling has been used to date. In the Comacho distribution system 18,440 feet of 20, 16, and 4 inch cast-iron pipe has been laid.

At Las Cascadas but little work has been necessary other than to maintain the old French system formerly installed at that point; the idea being that in the coming year Las Cascadas will be connected with the Comacho reservoir, and also with the pumping station at

Bas Obispo, about 1 mile to the north, in order to have at all times an ample supply from the two points for the yards and engine houses, as well as for domestic purposes.

At Bas Obispo during the year pumps have been erected, taking water from the Mandingo River to supply both Bas and Haut Obispo, this water being pumped to tanks on the hills, from which it is distributed thru the old French system of mains existing at this point, there being tanks of a capacity of 80,000 gallons at Bas Obispo and 40,000 gallons at Haut Obispo, which have been erected during the past year.

At both these points sewerage systems have been installed for the connection of each and every house in the settlement, 3,280 feet of pipe being used, and plumbing connections have been made.

In order to prevent contamination of the Mandingo River from the backing up of the waters of the Rio Obispo, a rock-fill dam has been built at a point 600 feet above the pumping station, thus rendering potable water available for both these camps, and since December, 1905, a distilling plant has been in constant operation, furnishing distilled drinking water to both of these places.

At Gorgona a dam containing about 3,500 cubic yards of filling has been constructed in the valley of the Rio Carabali, the water in this dam being held at an elevation of 65 feet above the sea level, and the reservoir impounding about 48,000,000 gallons.

The water from this reservoir is pumped to a new concrete distributing reservoir, the capacity of the distributing reservoir being 279,000 gallons.

From this concrete reservoir water is supplied to Gorgona, Bas Matachin, the shops, the laborers' quarters, and the town of Matachin. The total length of pipe laid on this pipe line, consisting of 4, 6, and 8 inch cast iron, is 17,770 feet.

The Gorgona sewerage system has been constructed, consisting of pipe varying from 6 to 12 inches in diameter, 3,700 feet having been laid, leaving 3,500 feet to be laid to complete the system as planned. The large machine shops at Bas Matachin have been, in addition, connected directly to the Chagres River thru the proper sized pipe, and the sewerage system at the shops fully completed.

At Chagres labor encampment a pipe has been installed and water furnished to public taps thruout the encampment, but this is only temporary, as this camp will eventually be supplied by the extension of the 6-inch main leading to Matachin.

At Tabernilla no new work has been inaugurated during the past year, as the keeping up of the old French mains and pumps has taken all of the time. It is expected to entirely rebuild this system during the coming year.

COLON WATER SUPPLY.

Operations under the approved plans have been carried on as fast as practicable during the entire year. In general, the system consists of a receiving reservoir, known as the Mount Hope Reservoir, but which is really some 2 miles back from Mount Hope, which reservoir will have a capacity of about 520,000,000 gallons. The extreme height of the dams which are now being built is about 60 feet above high tide at Colon, the water elevation about 55 feet.

From this reservoir a 20-inch cast-iron pipe line is connected with two duplex pumps at Mount Hope, which pump into a 500,000-gallon steel standpipe erected on the hill at Mount Hope, and from this standpipe the water is led direct by the 20-inch main to Colon and Cristobal.

There yet remains to be placed about 31,000 yards of earth embankment to complete the reservoir. The gatehouse has been carried up as the dams progressed, and at the present time the main dam is being put in service for supplying water to Colon.

Within the city of Colon the entire system of mains which has been designed and approved has been laid, as follows: Twelve-inch pipe, 1,500 feet; 10-inch pipe, 6,252 feet; 8-inch pipe, 6,252 feet; 6-inch pipe, 21,444 feet, or a total of 35,448 feet of cast-iron water mains, upon which there are placed 64 fire plugs and 80 gates. From the 20-inch main leading from the pumps at Mount Hope to the town of Colon the Cristobal water supply is taken off, and there has been laid in this system a total of 8,814 feet of pipe, varying from 10 to 8 inches in diameter, having 23 fire hydrants and 12 gates.

All houses in Cristobal occupied by whites have been connected with this system, and the standpipes and pumps were put into active operation at the end of the fiscal year. All other houses, as fast as built, are being connected with this line, and Cristobal and Colon to-day have an adequate water supply for any and all purposes; and in Colon street hydrants have been placed every 700 feet to supply the inhabitants with water until such time as house connections are made.

During the construction of the permanent water supply for Colon, and to furnish a supply other than that furnished by the Panama Railroad during the last dry season, a temporary reservoir was built above the permanent reservoir, now under construction back of Mount Hope, from which temporary reservoir a pipe line 4,700 feet long was laid to connect with the French pumps located near Mount Hope, and from this point the water was pumped thru the French system, thru the Panama Railroad system of pipes, to the cities of Colon and Cristobal.

The work was started on June 6, 1905, with all of the men available, and on October 30 the flume was closed and water permitted to collect, and this dam, together with a small one immediately below the same, collected enough water to carry Colon thru the dry season, up to and including the 1st of April, 1906, on which date it became necessary to make arrangements to supply Colon with water by hauling the same over the Panama Railroad.

The Panama Railroad immediately took up the matter, and put on a water train hauling daily 200,000 to 250,000 gallons of water into Colon in cars, and from these cars it was distributed to the people at four different places in the city, or just twice as many places as had heretofore been the practise.

At no time during the past year has Colon or Cristobal suffered from a lack of water supply; altho, often, only a quantity was on hand which would not be considered adequate for an American city, yet at the height of what was called the water famine there was daily more water in Colon per inhabitant than was ever known there at any previous time.

And the charge which has been publicly made that salt water was pumped thru the water mains to Colon, for supplying the inhabitants of this place with water for domestic purposes, is absolutely and unqualifiedly false. The only salt or other brackish water which was pumped at all was thru the old French main leading to the baths and water-closets at Cristobal. The drinking and cooking supply was obtained and always available from rainwater tanks and water hauled in by the Panama Railroad. In fact, no possible physical connection existed, or ever did exist, whereby salt water could be handled by any pumps, or thru any mains, into the city of Colon, and the statement that such salt water was pumped was a lie, direct and simple.

At a large number of points between Panama and Colon the work of operating the existing French systems, and plans for improving them to take care of emergencies from time to time, has been carried on.

In addition to these operations, at the following points sterilizing or distilling plants have been installed and operated during the year: At Ancon Hill, Culebra, Empire, Cascadas Bas Obispo, and Gorgona, and in every case the water is pronounced perfectly satisfactory and healthy by the physicians.

Much detail has been gone into and given in the report covering the operation of the division of municipal engineering, as covering the installation of water and sewerage plants, the paving of the streets of Panama, the building of roads, and various other items which are embraced in the work of this very important division, and this detail has been given only to show the variety of and the vast interests which the work of this division covers, it being a coordinate and very necessary adjunct to the work of the sanitary department, and without such cooperation the work of the sanitary department would be a failure instead of what it is—a great and satisfying success.

Long and vexing delays have been made in the furnishing of material. The division has suffered in common with others, probably to a larger extent, by reason of inferior labor. It has, also, thru resignations and dismissals, been handicapped by many changes in the personnel of its engineers, but, taken as a whole, its work has been very satisfactory, and much credit is due to the engineers and superintendents, who have at all times given their best work to accomplish the work in which, it is felt, pride can be taken.

DIVISION OF BUILDING CONSTRUCTION.

At the beginning of the fiscal year this organization was known as the bureau of architecture and building, but in September it was deemed best to reorganize the same and change its title to that of division of building construction. But very few changes have been made in the personnel of the supervising force since that time.

Commencing in September, and for several months following, a large quantity of building material, ordered many months before, began arriving, and by increasing the force it was possible to make a good showing in the repair and construction of buildings.

In the month of February the total force actually working had increased to 3,150 men, the highest number recorded, but from that time the force was gradually reduced, as the lack of certain necessary

sizes of lumber began to be felt, with a large number of buildings unfinished.

A new supply, however, has arrived, and the force at the end of the fiscal year is being augmented, and the unfinished buildings are being completed and a large number of new ones started.

The personnel of this division covers a vast number of artisans of different occupations and wages, from master builder, architect, draftsmen, clerks, engineers, superintendents, foremen, timekeepers, carpenters, masons, plumbers, painters, bricklayers, plasterers, machinists, tinsmiths, blacksmiths, and pipesmiths, and the total number of such artisans on the gold rolls, so-called, in service on June 30, 1906, with changes in the force, was as follows:

Total number in service June 30	681
Transferred to other divisions	49
Resigned or voluntarily left the service	393
Died	7
Discharged for cause	298

There have been prepared by the architects during the past year 296 finished sets of plans, consisting of 825 sheets of tracings, and also bills of material for all these sets. The drafting force consisted on an average of about 6 draftsmen, an estimator, and a blueprinter.

The following is a general classification of the drawings, under the different headings, and the total number:

Classification of drawings.	Complete sets.	Total number of tracings.
Hospital buildings	57	104
Type houses and residences	26	91
Official residences	14	39
Court houses and jails	8	25
Mess halls, barracks (gold) commissaries and Y. M. C. A.	13	47
Silver quarters	13	16
Office buildings	17	53
Shops, mills, wharves, storehouses	23	47
Governor's residence (complete set of plans not yet finished)	1	37
Tivoli Hill Hotel	3	47
Maps and plots	50	50
Miscellaneous	48	137
Corrals, stables, fire stations, railway stations, schools, post-offices	22	47
Planing-mill drawings	1	85
Total	296	825

We have been unable to get and keep a corps of skilled men of good technical education and of wide experience, and this has been a serious handicap to the work, as the variety of the different classes of buildings for which plans have been drawn has been very large, thus requiring all-around so-called architects and draftsmen.

It became necessary to evolve certain types of residences for both single and married employees which would meet the requirements of the isthmian climate, the material available, the character of the building sites, with the necessary restrictions imposed by the sanitary department, and the official status of the employees. With these ends in view there have been prepared plans of 17 types of houses, all of which meet the necessary requirements fairly well, chief among these requirements being a style of architecture required in a damp, insect-infested, tropical country, all of the construction being of wood

with plenty of openings for ventilation; and every opening, including verandas, must be provided with fine copper screening in order to, just as far as practicable, exclude all mosquitoes.

New buildings which were constructed during the year, for which plans were made, are as follows:

Portable houses:		Barracks, silver employees: La Boca. 2
Ancon Hospital.....	5	Shops:
Tivoli Hill.....	3	Ancon wood and machine shop
Pedro Miguel.....	2	addition.....
Empire.....	10	Lirio, planing mill.....
Houses type E-2: Ancon Hospital.....	2	Ancon, concrete block plant.....
Houses type 1:		Cristobal, office master mechanic
Pedro Miguel.....	6	Hospital buildings:
Bas Obispo.....	3	Ancon—
Gorgona.....	2	Temporary body storage.....
Cristobal.....	4	Seven leper houses.....
Houses type A: Paraiso.....	14	Culebra—
Houses type 4: Culebra.....	2	Operating room.....
Houses type 5:		Morgue.....
Culebra.....	5	Empire, Emergency Hospital.....
Empire.....	1	Haut Obispo, annex to hospital.....
Cristobal.....	1	Colon—
Houses type 6: Culebra.....	2	Colored ward.....
Houses type 7: Culebra.....	3	Ambulance shed.....
Houses type 8: Culebra.....	1	Hospital storeroom.....
Special type:		Mess halls: Cristobal.....
Culebra, chief engineer.....	1	Administration building: Culebra
Cristobal, chief, material and sup- plies.....	1	Storehouses:
Houses type 10: Culebra.....	1	Culebra—
Orderlies' quarters: Ancon.....	1	Corral.....
Married laborers' quarters:		Dynamite magazine.....
La Boca.....	4	Empire, commissary.....
Enterprise.....	6	Bas Obispo, dynamite magazine.....
Barracks, gold employees: La Boca..	2	Mount Hope, oil house.....

Statement of buildings repaired and constructed, demolished, remaining, and totals, from July 1, 1905, to July 1, 1906.

Town or railroad station.	Number on hand July 1, 1905.				Class of construction.				Number on hand July 1, 1906.
	Number previously repaired.	Number repaid this year.	Number destroyed.	Balance to be re-repaired.	Number previously constructed.	Number constructed this year.			
Taboga.....	8	1	.....	7	.....	.....	.....	.....	8
Naos.....	3	.....	1	2	.....	.....	.....	.....	2
Flamenco.....	2	.....	.....	0	2	.....	.....	.....	2
Farfan.....	3	.....	.....	3	.....	.....	.....	.....	3
La Boca.....	65	12	17	8	27	1	10	8 quarters, 2 storehouses	67
Panama city.....	3	2	1	0	0	1	.....	Storehouse.....	4
La Section.....	24	5	2	18	1	.....	.....	.....	24
Ancon.....	93	41	5	45	2	23	12 quarters, 2 shops, 1 storehouse, 8 hospitals.	.....	116
Corozal.....	36	24	1	6	5	.....	.....	.....	36
Rio Grande Inferior.....	7	.....	.....	7	.....	.....	.....	.....	7
Butte Cardenas.....	2	.....	.....	2	.....	.....	.....	.....	2
Ecuse 10.....	13	.....	.....	13	.....	.....	.....	.....	13
Miraflores.....	31	17	11	3	.....	.....	.....	.....	31
Pedro Miguel tank.....	21	.....	7	14	.....	.....	.....	.....	21
Ecuse 9.....	11	.....	.....	11	.....	.....	.....	.....	11
Pedro Miguel.....	24	3	6	3	12	9	1 mess house, additional 8 quarters.	.....	30
Forty-Mile.....	20	.....	20	0	.....	1	1 cook shed.....	.....	21
Siding, kilometer 58,600.....	3	.....	.....	3	.....	.....	.....	.....	3
Ecuse 7 and 8.....	1	.....	.....	1	.....	.....	.....	.....	1

Statement of buildings repaired and constructed, demolished, remaining, and totals, from July 1, 1905, to July 1, 1906—Continued.

Town or railroad station.	Number on hand July 1, 1905.						Class of construction.	Number on hand July 1, 1906.
	Number previously repaired.	Number repaired this year.	Number destroyed.	Balance to be repaired.	Number previously constructed.	Number constructed this year.		
Elcluse 8.....	7			7				
Paraiso.....	86	19	32	3	32	14	14 quarters.....	97
Carthagencis.....	24		22		2			24
Elcluse 7.....	7			7				7
Cucaracha.....	31		24		7			31
Enterprise.....	36	1		2	33	8	6 quarters, 2 baths.....	42
Rio Grande.....	8		4	1	3	2	1 bath, 1 closet.....	9
Cerro German.....	8		5		3	3	1 storehouse, 2 baths.....	40
Cerro Lirio.....	40		35		5			
Culebra.....	137	58	16	13	25	25	15 quarters, 1 workshop, 2 platforms, 2 hospitals, 2 workshops, 1 corral.....	29
Lirio.....	30		27	3	0		1 planing mill, 1 pump shed.....	29
Cerro.....	21		21		0		1 kitchen, 1 closet and bath.....	23
Empire.....	92	35	22	1	34		1 hospital, 4 storehouses, 1 telephone office, 11 quarters.....	108
Cunnnette.....	60	5	42		15			60
Casa Blanca.....	48		20	1	27			47
Las Cascadas.....	60	1	39	2	18			58
Haut Obispio.....	58	21	32		5	1	1 hospital addition.....	59
Buena Vista.....	49		30		19			49
Bas Obispio.....	68	5	17	4	42	6	1 storehouse, 2 pump sheds, 3 quarters.....	14
Ahlajuela.....	12		1		11			12
Cruces.....	5				5			5
Las Delicias.....	5		20		5			5
Gamboa.....	27		20		7			27
Chagres.....	25		20		5			25
Santa Cruz.....	61				61			61
Matachin.....	13		2		11			13
Bas Matachin.....	54	14	13		20	7	14 quarters.....	68
Kilometer 43,200-44,000	11				11			11
Kilometer 1,000.....	11				11			11
Gorgona Campment.....	39	25	6	7	1	4	1 sawmill.....	36
Enterprise.....	40		8		32			40
Kilometer 41,600.....	4				4			4
Caballo.....	18	1	9		8			18
Viejo.....								
Juan Grande.....	12				12			12
Mamel.....	9	2	4	1	2			8
Culo Seco.....	5				5			5
Elcluse 2.....	2				2			2
Coca Lane.....	18				18			18
Caimito Mulate.....	26				26			26
Enterprise.....	14				14			14
San Pablo.....	59	1	2	1	55			58
New Town.....	2				2			2
Barbacoas.....	7				7			7
Tabernilla.....	32		22	8	2		1 pump house.....	25
Ex. Enterprise.....	16		14		2			16
Sin la voie du kilometer 29.....	6				6			6
Chagres.....	12				12			12
Frijoles.....	2		2		0			2
Chagres.....	33				33			33
Bohio.....	48	2	14	1	31			47
New Town.....	1				1			1
Derivation 3.....	3				3			3
Derivation 4.....	5				5			5
Elcluse 1.....	18				18			18
Penas Blancas Arriba.....	3				3			3
Penas Blancas.....	7				7			7
Vamos Vamos.....	1				1			1
Gatun.....	5	1			4			5
Mindi.....	3				3			3
Mount Hope.....	19	1	4		14		1 storehouse.....	20
Cristobal and Fox River.....	238	60	61	3	109	5	6 quarters, 1 office, 1 mess hall, 6 hospitals.....	249
Total.....	2,171	357	661	62	1,043	48	156	2,268

At the different camps and points noted in the list below will be found statement of the general work of repair and construction over the entire zone, including Panama and Colon:

Taboga.—Repairs to large sanitarium which was received from the French Canal Company were entirely completed, and the building has been used during the greater part of the year for convalescent patients from Ancon Hospital.

Naos.—Repairs were made to tide-gage house used by the division of meteorology and river hydraulics.

La Boca.—Seventeen buildings were repaired for occupancy as quarters, dispensary, mess hall, and post-office. The following construction work was completed during the year: Eight buildings for use as quarters, 1 building for use as warehouse for the Panama Railroad, and 1 building for use as a lumber shed. In addition to this work, the foundation was laid for a new jail and police station pending decision as to the type of canal to be built.

Ancon.—The building used as plumbers' storehouse received repairs. The wood and machine shop at this point has been constantly in use during the year and an addition has been constructed to same, the lower half of which is used for shop purposes and the upper half for quarters. A small building for the storage of paint and a building for the manufacture of concrete blocks have been constructed.

Ancon Hospital.—Three buildings used as quarters and one building used for hospital purposes were repaired, and an extensive system of plumbing for sewerage and water purposes is now being installed thru the hospital grounds and buildings. The following buildings were constructed during the year: Seven leper houses, temporary body storage, and 9 houses for quarters. In addition to these the following are now in process of construction and will be completed within the next few months: Insane hospital, 44 per cent completed; bachelor officers' quarters, 80 per cent completed; tuberculosis hospital, 40 per cent completed; nurses' quarters annex, 79 per cent completed; maids' quarters, 82 per cent completed.

La Section.—Repairs were made to 1 building occupied as quarters and 1 building occupied as post-office.

Santa Rosa.—Work on the governor's house which was stopt August, 1905, was resumed again in February and is now being vigorously prosecuted.

Tivoli Hill.—The construction of a large hotel at this place (315 by 170 feet), built of frame and brick work, with tile roofing, three stories high, was commenced in August, 1905, and a large force of men has been at work on it thruout the year. This building is expected to be completed and ready for occupancy on October 15, 1906. Three portable houses have been erected on Tivoli Hill in the immediate vicinity of this hotel.

La Sabana.—A new jail is being erected in order to conform with agreements made with the Panaman Government some time ago. The building was 67 per cent completed on June 30, 1906.

Panama.—Considerable repairs have been made to the administration building—repairing roof, painting, moving partitions, plumbing work, etc. The American legation building and the I. C. C. freight house have also received repairs. A cement shed was constructed for the use of the waterworks and sewers department. Work on Santo

Tomas Hospital, which is the property of the Republic of Panama, was commenced June, 1905, and was continued throughout the year. This work consisted of some new buildings, additions and repairs made to old buildings, and a large portion of it has been accomplished. This work will be completed in the next few months.

Mira Flores.—Eleven buildings were repaired for use in connection with hospital purposes.

Pedro Miguel Tank.—Seven houses occupied by laborers were completed.

Pedro Miguel.—Six houses, used as quarters, commissary, mess hall, and police station, were repaired. Eight houses were constructed for quarters and an addition built to the mess house. In addition to the buildings completed, work has been commenced on the following buildings: Post-office 22 per cent completed; coal chute 26 per cent completed; mess hall 5 per cent completed.

Forty-mile Siding.—This settlement, which is practically a part of Pedro Miguel, has 20 houses, occupied by silver employees, all of which were repaired; and in addition to this, a cook shed was built for their use.

Paraiso.—Repairs were made to 32 buildings occupied as quarters, stable, commissary, church and school, and hospital. Fourteen buildings were constructed for quarters, and work is under way on 7 buildings for quarters, which are 75 per cent completed, and 1 sixteen-bed hospital, which is 11 per cent completed.

Cartagencita.—This encampment is occupied by laborers, and 22 of the 24 buildings therein have been repaired.

Cucaracha.—This encampment is occupied by laborers, and 24 of the 31 buildings therein were repaired. In addition to this, a sanitary department tool shed is 76 per cent completed, and a laborers' bath house is 15 per cent completed.

Enterprise.—Six buildings were constructed for quarters and 2 buildings for bathing purposes. In addition to this, 4 buildings for quarters are 56 per cent completed.

Rio Grande.—Thirty-nine buildings were repaired for quarters, hospital, and commissary. One building was constructed for baths and 1 for closet.

Gold Hill.—Five buildings were repaired for quarters, and 2 were constructed for baths, and 1 for the storage of dynamite.

Culebra.—Sixteen buildings were repaired for use of quarters, post-office, pay office, commissary, storehouse, schoolhouses, and lodge. The department of construction and engineering was removed in March from Panama to what is now known as the administration building, which was erected at Culebra, the same being a large and commodious structure of two stories, giving ample room for the force employed. In addition to the administration building there were erected residences for the chief engineer and the master builder, and 13 other houses used for quarters for bachelors and married employees. There have also been erected 1 water-service workshop, 1 coal platform, 1 ice platform, 1 operating room, 1 morgue, 1 saw-mill, and 1 corral. In addition to the above there were in process of construction on July 1, a residence for the assistant chief engineer, which was 78 per cent completed, and 32 houses for bachelor and married employees.

Lirio.—A planing mill was constructed at this point during the year, to be used for manufacturing purposes, and is now in operation. Shed for pumping station was also constructed. This is a silver encampment, and 27 of the 30 houses in it were repaired.

Cerro.—This is a silver encampment, and 21 houses in the encampment were repaired, and in addition, 2 buildings (one used as a kitchen and the other as a closet and bath) were constructed for the silver employees.

Empire.—Twenty-two houses were repaired for use as quarters, offices, mess hall, and storehouses. The following construction work was completed: One emergency hospital, 1 commissary, 11 houses for quarters, 1 house for telephone, 1 building for rubber goods storehouse, 1 stable extended. The following construction work is now in progress at this point and at Comacho, the work at Comacho being done in connection with the installation of the auditing and disbursing building at this point, and quarters for their employees, also court-house and residence for the associate justice: Eighteen buildings for quarters, 1 court-house, 1 new jail, and 1 auditing and disbursing building, which was 70 per cent completed July 1. Office building and quarters at Comacho are expected to be completed by the end of August.

Cunette.—Forty-two buildings were repaired in this encampment for quarters, school, and hospital.

Casa Blanca.—Twenty buildings were repaired in this encampment for quarters.

Las Cascadas.—Thirty-nine buildings were repaired in this encampment for quarters, school, and hospital. In addition to the above, work was commenced on the following buildings at this point: Engine house, coal chute, mess hall, and 17 houses for quarters.

Haut Obispo.—Thirty-two buildings used for quarters were repaired and a hospital addition was constructed to the present hospital here. Work is in progress on ammunition storehouse at this point.

Buena Vista.—This is a silver encampment and repairs were made to 30 houses in it.

Bas Obispo.—Repairs were made to 17 houses occupied as quarters, hospital, hotel, and storehouse. A building was erected for the storage of dynamite. Three buildings were erected for quarters and 2 pump sheds were erected. In addition to the above, work has been started on a jail at this point.

Gamboa.—Repairs were made to fluviograph tower and to 19 buildings occupied as quarters.

Alhajuela.—Repairs were made to the fluviograph house at this point.

Chagres.—Repairs were made to 20 buildings used for quarters, and schoolhouse.

Matachin.—Repairs were made to 1 building used as quarters and to 1 building used for police station. One house for quarters and 1 jail are in process of construction.

Bas Matachin.—Repairs were made to 13 buildings used for quarters and shop purposes. Twelve buildings were constructed for negro laborers and 2 buildings for negro mechanics. Work is in progress on repair shop and addition to car repair shop.

Gorgona.—Repairs were made to 14 buildings occupied for quarters, paint shop, post-office, and commissary. The following buildings

were constructed: Sawmill, 2 houses for quarters, and two-room addition to superintendent of motive power and machinery's house. In addition to the above we are now erecting at this point 13 houses for quarters, 1 jail, and 1 mess hall.

Caballo Viejo.—Nine buildings were repaired for use as quarters.

Mamei.—Four buildings were repaired for use as quarters.

San Pablo.—One building was repaired for use as a post-office, and 1 building for use as school.

Tabernilla.—Thirty-six buildings were repaired for use as quarters, post-office, mess hall, and sanitary department. A new pump house was constructed for the waterworks and sewers department.

Frijoles.—One building was repaired for quarters and 1 building for school.

Bohio.—Fourteen buildings were repaired for quarters.

Mount Hope.—Four buildings were repaired to be used for quarters, warehouses, and shops. An oil house was constructed at this point. Residence for pump keeper is in process of construction.

Cristobal.—Fifty-two buildings were repaired for use as quarters, offices, and storehouses. Six buildings were constructed for quarters, 1 building for office of Cristobal shops, and 1 building for mess hall. In addition to the above we are now at work on 36 houses to be used for quarters, 1 house to be used for warehouse, and 1 house to be used for fire station.

Colon.—The work at this station is entirely in connection with hospital work, and repairs were made to nine buildings which are used for hospital purposes, or for quarters for employees connected with the hospital. During the year we constructed a colored ward, ambulance shed, sea wall, hospital storeroom, and 2 gate houses. In addition to the above we partially completed new hospital on Coral reef, laundry building, and 6 houses to be used for quarters for nurses and doctors.

The total amount of lumber used in the above work was 14,164,194 feet board measure.

The work of the construction of a permanent residence for the Governor of the Canal Zone was begun during the year, and prosecuted with a small force thruout the year, and is now still in progress.

This building is being constructed of concrete blocks which are made in a plant established at Ancon, this building being intended as the permanent residence of the Governor of the Canal Zone, not only during the period of the construction of the canal, but afterwards.

While a tremendous amount of work has been done in the repairing of old quarters and construction of new, and the conditions, as regard the housing and caring for 20,000 or more people, were, at the end of the fiscal year, in a much more satisfactory shape than at its commencement, the increase in the number of employees has kept pace with additional facilities, particularly in regard to white employees.

While at all times during the past six months it has been practicable to care for three to five thousand additional laborers, the quarters for white employees have never been sufficient for the demand, particularly for married quarters, and it is expected that this condition will obtain, to a greater or less extent, for six months or a year to come.

In addition to the construction of the necessary buildings for offices and quarters, it must be borne in mind that provision for hotels, mess houses, post-offices, schoolhouses, court-houses, hospitals, and other adjuncts are constantly increasing, and until the latter classes

of buildings are provided, the work must go on as rapidly as it can be pushed.

Generally speaking, however, it has been found practicable, with very few hardships, to properly care for all employees on their arrival, and the conditions are continually growing better, and with the class of buildings which have been and are being constructed, taken in connection with the installation of water and sewerage, it is believed that the provision which has been and is being made for the comfort and health of the employees of the Commission has never been approached or attempted under similar circumstances and work.

MECHANICAL DIVISION.

At the beginning of the year operations were commenced with shop organizations at Cristobal, Bas Matachin, and Empire, which organizations have been continued and enlarged, and in addition the shop organization at Culebra, which had heretofore been under the jurisdiction of the Culebra division, was turned over to the mechanical division on October 1.

As the Culebra shop was erected inside the prism of the canal, and needed repairs and enlargement, it was abandoned and the tools and equipment moved to Paraiso, where existed the former repair shops of the old French company, which were enlarged, repaired, and fitted up with machinery from the old Culebra shop and put in shape for service.

On June 30, 1906, the organization consisted of a force of 1,812 men, divided between general supervision, the Cristobal shops, the Bas Matachin shops, Empire shops, Paraiso shops, and the air compressors, and of the above 519 were artizans, foremen, clerks, etc., on the gold rolls, and 1,293 were Jamaicans on the silver rolls.

The organization at the present time is not quite sufficient to meet the rapidly growing requirements of the other divisions, but as the existing plants are being rapidly enlarged and as there is on requisition new equipment and material, it is believed that as the improvements now in progress are completed that this division will be able to handle all work that it may be called upon to perform.

It is probable that during the succeeding year it will be necessary to install a specially-arranged shop for the general repairing of steam shovels, unloaders, and bank spreaders, and plans are now under consideration for such a plant.

The principal work of this division during the year has been the repairing and enlarging of existing shops and the building of additional new shops and attendant facilities, together with the repairing and maintaining in serviceable condition enough of the locomotives, dump cars, and miscellaneous equipment of the old French stock until it could be replaced with modern and economical equipment and the work of erecting and putting in service of the new American modern equipment as it arrived on the Isthmus.

With the exception of two buildings and a small amount of track work, all buildings repaired and erected, with attendant facilities, all grading for shop sites and the locating, ballasting, and repair of shop tracks have been handled by the forces of this division.

In explanation of the above, would say that this system was in vogue at the commencement of the year, and for good reasons it was

thought best to continue the work in the mechanical division until it was completed.

The following statement gives the principal equipment which is in service or ready for service at the beginning and ending of the past fiscal year:

	June 30, 1905.	June 30, 1906.
Steam shovels:		
45-ton.....	0	1
70-ton.....	5	15
95-ton.....	2	23
Locomotives:		
French.....	58	100
New American and Panama Railroad.....	0	39
Cars:		
French dump.....	727	541
American dump.....	0	324
American flat.....	0	1,061
Lidgerwood unloaders.....	0	12
Bank spreaders.....	0	13
Unloading plows.....	0	22

As the new American equipment is being put into service the old French equipment is being withdrawn as fast as possible, owing to its lack of economy, as various improvements have been made since it was originally constructed, altho much of the old shop equipment is being maintained in service wherever its use has been found advantageous.

This division has been handicapped more than any other by the unsatisfactory character of a large percentage of its employees, as its personnel consists very largely of artizans for whom there is a very large demand in the States.

The result of this has been that many changes in personnel have been forced. Many dismissals have been made from various causes, and continual changes of this kind are detrimental to the work. Altho the situation is constantly becoming better, it has not yet arrived at a point where it is satisfactory.

The principal shops of the Commission are located at Bas Matachin, where the French had erected a small shop, which, however, was totally inadequate both in size and equipment for the purposes for which it was assigned.

A steam shovel was put in service at this point and the ground excavated sufficiently to obtain room for the tracks and furnish material for filling low grounds, and for other purposes, and about 75,000 cubic yards of such material was taken out and utilized.

A new foundry 70 by 120 feet has been completed, fully equipped with cupola, charging floor reached by an air lift of 5 tons capacity, with steel concrete double-core oven, and a six-oven brass furnace, with necessary fixtures and equipment. In addition, a new core room, flask room, casting cleaning room, and foundry engine and blower room were erected. Also all other needed accessories requisite for maintaining and operating an iron and brass foundry.

The present foundry capacity is 90 tons of gray iron per month, but on installation of the new cupola this will be increased to 250 tons per month, and during the year 1,151,607 pounds of gray iron and 60,000 pounds of brass castings were made.

A new planing mill 60 by 120 feet was erected. Also a new boiler and tin shop 60 by 180 feet was erected and put into service.

Along the front of the machine shop, boiler shop, and blacksmith shop there have been erected 14 pits of a 22-pit erecting shop, each pit being 70 by 22 feet, and in front of the erecting shop there has been built a 50-foot platform and a 50-foot transfer pit extending the full length of the shops.

An extension to the machine shops proper 120 feet long has been completed, to be used for bench and vise work.

The shop trackage system has been nearly completed. Also a system of water mains and sewerage has been put in, as noted in the report of municipal engineering.

Two additional old French boilers have been repaired and installed in the power plant, and a water sterilizing plant, for drinking water, for the use of the employees, piped thruout the shops. A large number of new tools were installed in the various shops on permanent concrete foundations, shafting, etc., a list of which is included in the list of tools purchased and installed during the year, which is attached to this report.

At these shops have been carried on the hundreds of different operations in the nature of construction and repairs to supply the innumerable wants of the different divisions, a list of which would be too long and too much detailed for this report, and the same is true of the work of the other shops.

At the Cristobal shops there was completed the erection of a blacksmith shop and a 9-pit erecting shop, which had been commenced the previous year. Also, in addition, a large 6-track car-erecting shop was built, a wood machine shop, a sawmill, a new boiler plant with 4 new boilers installed, and also 2 new stationary engines and air compressor, with the necessary changing in the shafting and piping, were erected. A new concrete blower was put in the machine shop and a new platform and transfer pit and table in front of the erecting shop.

At the Empire shops the building improvements have been in the nature of repairs to existing buildings and small extensions, increasing the floor space with the idea of treating this plant as a temporary one, the additions covering 3,200 square feet floor space to the machine and erecting shop, 800 square feet to carpenter shop, 500 square feet to machine shop, 700 square feet to the blacksmith shop, a tool room of 560 square feet of floor space, and a paint shop of 560 square feet of floor space. A new sand house was built, with sand dryer, with wet and dry sand storage sheds.

A large number of machine installations were made, and a number of minor conveniences for doing work economically were also put in.

The present Paraiso shops were located at Culebra, but were moved to Paraiso, necessitating the rebuilding of a machine and blacksmith shop combined and an erecting shop, with the moving of the tools from Culebra and their resetting, together with the attendant necessities in the way of foundations, shafting, etc. The yards were also graded and walks built, and there was built also, in addition, 1 oil room, 1 sand house, coaling platform, wash rooms, storerooms, and tool rooms.

Connected with these shops and handled under their supervision are the engine houses at Cucaracha and Lirio, where engines connected with the Culebra work are taken care of at night and minor repairs made as required.

AIR COMPRESSOR AND PIPE-LINE PLANT.

It was decided to erect 3 large air-compressor plants—at Rio Grande, at Empire, and Las Cascadas. All these plants are connected with the 10-inch pipe line extending the whole length of Culebra cut, from Pedro Miguel to Bas Obispo, a distance of about 9 miles, the object of this pipe line being, of course, connection with the compressors in order to furnish comprest air as a motive power for the drills necessary in the drilling and blasting of the material in the Culebra cut.

At Rio Grande the necessary excavation, covering 3,000 yards of rock for the site, was completed, the foundations were built, and the installation of 2 air compressors of 2,500 cubic feet of free air per minute, with all air receivers and pipe connections.

Built foundation for 6 boilers and placed same in position, with all connections. Laid all water connections for compressors and boilers. Distributed 4,154 feet of 10-inch air pipe and connected up the same; also made proper connections with the air receivers. Also constructed a building over the compressors and boilers, and this plant is now ready to furnish air to any point in the vicinity of Gold or Contractors Hill, which are at the summit of Culebra Hill.

At Empire 2 air compressors of the same capacity as those at Rio Grande have been installed and buildings erected over them. Boilers are now being put in, stacks are built, and air receivers are ready for installation. This plant is rapidly approaching completion.

At Las Cascadas foundations for the 2 compressors have been finished and the compressors are now being installed. Boilers for this plant have not yet arrived from the States.

A large quantity of 6, 8, and 10-inch pipe, with miscellaneous fittings, are under order, and on their arrival will be rapidly laid and connected with compressors.

The compressors now on the Isthmus have a capacity of 15,000 cubic feet of free air per minute, and we have, in addition, 6 more under order, and on the installation of these we will have a capacity of 30,000 cubic feet of free air per minute available for the handling of air compressors thruout the cut.

So far the electrical work of this division has been of small importance, but on the arrival of machinery and material for the electric lighting of Culebra, Empire and Gorgona, and our Bas Matachin shops, which have been under order for some time, the work of the installation of this electric plant will rapidly proceed.

Below find a list giving the record of clerks and skilled labor appointed in the United States during the fiscal year, this list giving the number of each class we have here, those who were discharged or quit, and the per cent of those retained who are competent, which latter is shown in the list as being 54 per cent—rather a low average.

MECHANICAL DIVISION.

Record of clerks and skilled labor appointed in the United States during fiscal year.

Trade.	Hired in United States.	Discharged and quit.	Retained.	Per cent of men retained who were competent.
Machinists.....	207	84	123	59
Blacksmiths.....	23	17	5	21
Mounders.....	25	17	8	32
Patternmakers.....	13	2	11	85
Coppersmiths.....	4	1	3	75
Copper and tin smiths.....	5	1	4	80
Tinsmiths.....	4	4	.....	.....
Car inspectors and repairers.....	16	3	13	81
Pipefitters.....	15	12	3	20
Planing-mill hands.....	2	1	1	50
Blacksmiths' helpers.....	4	2	2	50
Carpenters.....	1	1	.....	.....
Locomotive painters.....	4	3	1	25
Draftsmen.....	8	.....	2	100
Clerks.....	11	9	2	18
Boiler makers.....	43	19	24	54
Total.....	385	176	209	54

Items of equipment which are in service, available, or under process of erection June 30, 1905, and June 30, 1906.

	June 30, 1905.	June 30, 1906.
Steam shovels.....	7	40
French locomotives.....	0	439
French cars.....	727	541
New cars.....	0	1,385
Lidgerwood unloaders.....	0	12
Unloading plows.....	0	22
Earth spreaders.....	0	13

*Twenty-four for Panama Railroad.

Following is a list giving the principal items of new equipment erected, and French equipment given initial repairs, to place same in a serviceable condition, also secondary general repairs to continue the same in service:

Item.	Cristobal.	Bas Matachin.	Empire.	Paraiso	Total.
New locomotives erected.....	30	9	.....	.....	*39
New steam shovels erected.....	.....	31	.....	.....	31
Old French locomotives:					
Given initial repairs.....	1	1	11	1	14
Given secondary general repairs.....	14	1	19	10	44
Given light repairs.....	1	10	111	600	722
Western dump cars erected.....	300	.....	.....	.....	300
Standard steel flats erected.....	300	.....	.....	.....	300
Box cars (for Panama R. R.) erected.....	164	.....	.....	.....	164
Wooden flats erected.....	561	.....	.....	.....	561
Ingoldsby dumps.....	12	.....	.....	.....	12
Goodwin dumps.....	12	.....	.....	.....	12
King Lawson.....	1	.....	.....	.....	1
French dumps given initial repairs.....	80	.....	307	.....	387
French dumps given secondary repairs.....	.....	461	384	.....	825
All cars given light repairs.....	20	376	124	1,569	2,089
Flat cars built from old French dumps.....	27	3	75	.....	105
Outfit car built for Panama R. R.....	.....	16	.....	.....	16
New locomotive crane erected.....	1	.....	2	.....	3

* Twenty-four for Panama Railroad.

List of principal items of shop equipment installed in the shops of the mechanical division during the fiscal year ending June 30, 1906.

Article.	Cristo-bal.	Bas Ma-tachin.	Empire.	Paraíso.	Total.
Lathes.....	3	7	5	4	19
Planers.....	2	3	1	1	7
Shapers.....		1	1	1	3
Milling machines.....		2			2
Centering machines.....		1	1		2
Radial machines.....	1	2			3
Drill press.....	6	7	4	3	20
Boring mills.....	1	1	1		3
Driving-wheel lathes.....		1			1
Pipe-cutting machine.....			1		1
Bolt cutters.....	1		2		3
Nut tappers.....			1		1
Stay-bolt cutter.....			1		1
Wheel borer.....		1			1
Emery grinders.....	1	3	4	2	10
Saw grinders.....	1	1			2
Grindstones and frames.....		1	3	1	5
Cold-cut offsaws.....	1	1	1		3
Rail saw.....	1				1
Belt-lacing machine.....		1			1
Air compressors.....	1	1	1		3
Stationary engines.....	1	1			2
Stationary boilers.....	4	3			9
Steam pumps.....		1		1	2
Sterilizing plants.....		1			1
Steam hammers.....	1	1	1		3
Bradley helve hammers.....	1	1	1		3
Forges.....	10	8	6	11	35
Overhead cranes.....	9				9
Traveling cranes.....		2			2
Bolt headers.....		2			1
Power bending roll.....		1	1		2
Bending clamps.....			1		1
Flue-welding machine.....			1		1
Punch and shears.....		2		1	3
Pneumatic forging machine.....		1			1
Blowers.....		1			1
Water tanks.....			1		1
Band saws.....	1	2			3
Ripsaws.....	1	1			2
Wood-boring machine.....			1		1
Wood planers.....	1	2			3
Mortising machines.....	2				2
Knife grinder.....		1			1
Patternmakers' lathes.....		2			2
Patternmakers' vises.....		6			6
Platform scales.....		1		1	2
Wood-boring machines.....	1	1			2
Foundry cupola.....		1			1
Wheel press.....		1			1
Casting-cleaning rattlers.....		3			3
Six-pit brass furnace.....		1			1
Patterns.....		450			450

The labor expenditures on work for other departments or divisions during the fiscal year, covering work done for the department of government and sanitation and the following divisions: Colon, Chagres, Culebra, La Boca, Gamboa, the division of building construction, division of meteorology and river hydraulics, the division of material and supplies, the branch of labor and quarters, the Panama Railroad and other departments, amount to \$306,306.

It must be borne in mind that the work of this division during the past year has been that of construction, of maintenance, and of operation. In other words, it has had to create its own plant, to repair old, practically worn out, and dismantled equipment in order that the work in any of the other divisions should progress; it has had to keep up repairs on all machinery and equipment, and it has also had to design, make specifications, receive and erect, ready for service, new and modern equipment.

Its operations have been manifestly satisfactory, and it has proved efficient to a marked degree, notwithstanding the heavy handicaps it has been under from lack of sufficient and efficient skilled laborers.

DIVISION OF METEOROLOGY AND RIVER HYDRAULICS.

As noted in previous reports, this division was organized during the fiscal year, and new stations were established for the taking of data covering meteorology and hydraulics and different phases of the weather.

Rain gages were established, not only along the Chagres River, but its tributaries and to the eastward over thru the San Blas Mountains practically to the coast, but in January such an extension was deemed unnecessary and the observing stations were reduced to the following: Naos Island, La Boca, Ancon, Rio Grande, Culebra, Empire, Comacho, Gamboa, Bohio, Brazos Brook, and Cristobal, all being directly along the line of the canal and in the Canal Zone, and an additional station outside of the Canal Zone at Alhajuela, about 9 miles above Gamboa on the Chagres River. Nearly all these stations were equipped with proper instruments for recording the various data connected with the service.

A large part of the office work of the year has consisted in the classifying and properly disposing of the large amount of data which have accumulated since May, 1904, this data having been properly recorded, as well as the current observations during the year, and a vast amount of valuable information has been thus obtained.

The highest water on the Chagres River during the year was in the week ending May 12, the water rising 13 feet in 14 hours at Gamboa and 12½ feet in 16 hours at Bohio.

No very severe or otherwise exceptional freshets occurred during the year and the maximum discharge at Gamboa occurred on October 20, when the river gaged 25,532 cubic feet per second, and on April 3 it showed 417 feet per second.

The yearly amount of rainfall at different stations along the canal line is as follows:

La Boca.....	60.64	Gamboa.....	73.72
Ancon.....	66.35	Bohio.....	98.72
Rio Grande.....	77.82	Cristobal.....	104.17
Culebra.....	88.73	Alhajuela.....	74.72
Empire.....	81.49		

The maximum temperature observed during the year at Naos Island recorded 97° and a minimum of 67°, or a mean temperature during the entire twelve months of 81.4° F.; the mean humidity for the same period being 87.3°.

The prevailing winds for the entire period at the southern terminus of the canal being north and northwest.

No severe wind storms occurred during the entire period, the maximum velocity observed being but 42 miles per hour, and the average as shown by the records during the entire period being but 16 miles; the Zone being apparently, as far as the past record show, free from severe atmospheric disturbances.

The percentage of sunshine during the hours when the sun was above the horizon being 53 per cent of the entire time.

A seismograph, or earthquake recording instrument, is maintained at Ancon, but during the year it indicated only one earth disturbance, and this being of so slight a manifestation as to be imperceptible excepting by a very delicate instrument. Nothing whatever was recorded or noted during the occurrence of the earthquake at San Francisco.

The special work covered by this division entails the use of experienced and trained observers, and to a large extent the work of the past year has gone toward the preparation and drilling of the observers, but the permanent stations have been established and handled by trained observers. A mass of information is being collected which will become more valuable year by year and experiments are now going forward to obtain accurate data showing the results of evaporation in this climate. At some of the stations no observers are carried, the work being done by men connected with other divisions but, the work of the division as a whole is going forward very satisfactory.

DIVISION OF MAP MAKING AND LITHOGRAPHY.

The work of this division has been a continuance of the making of the necessary maps of all other divisions for the department of government and sanitation and the making of lithographic maps of the boundary line between the Canal Zone and the city of Panama, maps of proposed boundary line between the Republic of Panama and Costa Rica, maps of the Canal Zone in four colors, and other numerous maps required to keep up the current records and to bring the past records up to date.

BRANCH OF LABOR AND QUARTERS.

As noted in previous reports, this branch has charge of the hiring of all grades of employees, assigning them to the various departments as they may be needed, of providing and assigning them quarters, of supervising and directing the proper furnishing and care of said quarters, and of keeping a general personal record of all employees. It also directly handles all hotels and mess houses, and has general charge of all buildings on the Canal Zone belonging to the Commission.

The following table shows the total force in the three departments from the 1st of July, 1905, to the end of June, 1906, from which it will be seen that the total of 9,786 in July, 1905, was brought up gradually to a maximum in March, 1906, of 16,849, and at the end of June was 16,145.

Month.	Construction and engineering.	Government and sanitation.	Material and supplies.	Total.
July.....	5,318	2,718	1,750	9,786
August.....	6,853	3,237	1,636	11,726
September.....	8,525	3,052	2,107	13,684
October.....	8,860	2,812	2,281	13,953
November.....	8,824	2,600	1,831	13,255
December.....	8,651	2,477	1,443	12,571
January.....	10,194	2,700	1,585	14,479
February.....	10,920	2,717	1,493	15,130
March.....	12,334	2,845	1,670	16,849
April.....	12,156	2,696	1,303	16,155
May.....	12,961	2,680	1,356	16,997
June.....	12,141	2,648	1,356	16,145

During the year there were employed on the white, or so-called gold rolls, in the United States 2,281, on the Isthmus 2,035, or a total of 4,316.

During this period there were 2,525 losses from the service, either from dismissals or resignations, leaving a net addition to the white or so-called gold forces during the year of 1,791.

The following shows the total number of laborers that have been received on the work from each of the various sources of supply, with an approximation of the number leaving the Isthmus: Received from Barbados, 8,043; Martinique, 1,756; Jamaica, 4,981; coast towns and small islands, 10,254, or a total of 25,034, and during this year the approximate number of departures of this class of people to the same points were 12,840, leaving an approximate net of 12,194 on the Isthmus.

The supply of men received from Barbados has been continuous, and this immigration has necessarily depleted the population to a large extent, as far as able-bodied labor is concerned, so that our recruiting work there is becoming more difficult, and it is only a question of a few months when it will have to be temporarily suspended.

The laborers brought from Martinique were recruited under verbal agreement, and the new emigration laws, which are now being enforced on that island, will prevent us from doing any more work there.

We have maintained no labor agencies on the island of Jamaica: The Jamaicans that have come into our employ have been entirely of the independent class, coming of their own volition.

The number shown as having been recruited from coast towns and small islands includes the Spanish laborers that we have received from Cuba, three shiploads from the Windward Islands, and a few hundred Colombians. The Spanish laborers have proved very satisfactory, and are being paid 40 cents silver per hour, as compared to 20 cents silver paid to the West Indian laborers.

Skilled labor has been recruited thru recruiting agencies which have been established in the United States. Men are being furnished in most cases in fairly satisfactory numbers, and an improvement in the grade of these men is steadily observed. An increased wage rate for all classes of mechanics became necessary and was authorized in December, 1905, but even yet our scale of wages is not, in some instances, any higher than that prevailing in the United States, which makes it difficult to supply men of certain classes as rapidly as needed.

The employment of stenographers, clerks, and draftsmen is subject to civil service regulations, and we have not been furnished with a satisfactory grade of this class, and it has been necessary, and apparently will be, for us to make a considerable number of temporary appointments on the Isthmus.

The criticisms of the character of the common labor, which were made in last years' report, still hold good. Our labor consists almost entirely of West Indian negroes, and their efficiency is very low, altho we have a few of this class who are fairly steady workers—by this it is meant that they average to work all the time, but the great body of them do not.

The majority work just long enough to get money to supply their actual bodily necessities, with the result that while we are quartering and caring for twenty-odd thousand of these people, our daily effective force is many thousands less.

Preliminary steps have been taken toward looking to the securing of large numbers of Spanish laborers direct from the northwestern Provinces of Spain, also for the securing of a trial shipment of Cantonese Chinese, as it is believed that the introduction of laborers of different nationalities will be beneficial, and it is hoped that in the early part of the succeeding fiscal year that the labor situation will be greatly improved.

While, during the past year, the works have been fairly well supplied with labor, during the last three or four months several thousand more could have been worked; and since the decision of the type of canal has been made, 5,000 or 6,000 more could have been used than has been available, which has tended to somewhat delay the progress of the work.

The following buildings were controlled by the branch of labor and quarters on June 30:

White married quarters:		
French.....		235
New.....		73
Families quartered.....		375
Colored married quarters:		
French.....		297
New.....		20
Families quartered.....		1,000
White bachelor quarters:		
French.....		153
New.....		12

It became necessary during the fiscal year to provide some method by which employees could obtain meals at a reasonable rate, and eating houses were established at different points, and at the end of the fiscal year there were maintained by the Commission nine of these places for the benefit of white employees, the earliest at Corozal Hotel, so-called, being opened August 16, and the last one at Bas Obispo on April 16.

These hotels, or mess halls, were not opened by the Commission as a permanent arrangement, but was a substitute until an experiment could be made to see whether it was better to operate directly or under contract. A contract was entered into during the season with outside parties, but its terms were so unsatisfactory to employees that it was canceled, and the Commission took charge of the work of running these houses until some other arrangements could be made. So far the result has been generally satisfactory. We are handicapped, however, by the great difficulty of obtaining the requisite service, being dependent entirely on West Indian colored servants and attendants at the hotel; also by the lack of variety of food supplies, which will, however, be overcome when the new cold-storage facilities of the Panama Steamship Company are complete and the very large cold-storage and ice-making plant which the railroad company now has under construction at Cristobal.

The hotel and mess operations up to December 31, 1905, showed a loss of over \$14,000, but at the end of the fiscal year, or June 30, 1906, it showed a total net gain for the entire operation of \$5,300. It is, however, not intended to show any gain whatever. Every cent that is taken in shall be given back to the employees in the shape of the best food that it is possible to obtain for the money.

The result of the years' operations in the branch of labor and quarters has been, on the whole, very satisfactory. It is the most difficult branch of all our operations to satisfactorily handle, inasmuch as the general rule must be applied to all, no class favoritism can be allowed, and human nature is so constituted that while the average person is perfectly satisfied that a general rule shall apply to his neighbor, when it comes to apply to himself he objects. These things, however, are to be expected, as an organization of the size and character necessary to build the Panama Canal is like an army, inasmuch as it must be handled by fixt rules and regulations. Our plans have worked out even better than was expected.

Taking the entire work of the department as a whole, which it should be understood has been largely preparatory, while in many cases the expectations of months ago have not been realized, the results have been fairly satisfactory.

During the past year the headquarters of this department have been moved to Culebra, a new office building having been erected with the necessary quarters both for married and bachelor employees.

The force moved into these new quarters in March and the change, so far, has been eminently satisfactory.

The health conditions have been so very materially improved during the year that the feeling of fear and panic which prevailed at its beginning has been entirely done away with, and the fact has been proved beyond a doubt, that with rigid quarantine and with a never-ceasing vigilance in carrying forward sanitary measures, that the health of the average white person depends almost entirely upon the care he takes of himself, and that with the continuance of the liberal policy of the Commission, in regard to vacations, it is believed that the physical stamina of our average employees can be kept up to a standard equal to that which we would obtain in the greater part of the United States.

Respectfully submitted.

JNO. F. STEVENS,
Chief Engineer.

Mr. T. P. SHONTS,
Chairman Isthmian Canal Commission,
Washington, D. C.

EXHIBIT C.

ISTHMIAN CANAL COMMISSION.

Statement of receipts and disbursements to September 30, 1906.

	To June 30, 1906.	July 1, to Sept. 30, 1906.	Total to Sept. 30, 1906.
RECEIPTS.			
Appropriations by Congress:			
For purchase of canal rights, June 28, 1902.....	\$40,000,000.00		\$40,000,000.00
For purchase of Canal Zone, June 28, 1902, and Apr. 28, 1904.....	10,000,000.00		10,000,000.00
For construction of canal, June 28, 1902.....	10,000,000.00		10,000,000.00
For construction of canal, Dec. 21, 1905.....	11,000,000.00		11,000,000.00
For construction of canal, Feb. 27, 1906.....	5,990,786.00		5,990,786.00
For construction of canal, June 30, 1906.....		\$25,456,415.08	25,456,415.08
Revenues of Canal Zone;			
Postal revenues—			
Sales of stamps.....	25,683.23	6,059.00	31,742.23
Money-order fees.....	197.25	1,435.08	1,632.33
Internal revenues—			
Distilling licenses.....	12,533.33	1,658.40	14,191.73
Miscellaneous items.....	4,580.98		4,580.98
Other revenues—			
Court fees and fines.....	2,985.40	1,647.65	4,633.05
Police fines.....	726.05	121.00	847.05
Customs fines and penalties.....	450.00		450.00
Miscellaneous items.....	1,195.65	1,886.00	3,081.65
Receipts of United States funds:			
Sales of—			
Property.....	252,285.72	38,190.45	290,476.17
French material and equipment.....	1,678.41	757.21	2,435.62
Water.....	282.13		282.13
Shares of Panama Railroad stock to directors.....	1,300.00		1,300.00
Mess accounts.....	24,699.81	5,878.53	30,578.34
Quarantine subsistence.....	3,465.10	2,221.62	5,686.72
Receipts from hospital patients.....	39,586.59	12,330.12	51,916.71
Rentals of—			
Lands and buildings.....	38,336.73	589.30	38,926.03
Equipment.....	113,041.85	27,588.70	140,630.55
Panama water and sewer rentals.....		2,530.65	2,530.65
Colon water and sewer rentals.....		170.35	170.35
Miscellaneous.....	1,735.09	—41.60	1,693.59
Work done for—			
Panama Railroad Co.....	54,818.71	8,949.53	63,768.24
Other interests.....	2,043.24	353.63	2,396.87
Other receipts—			
Telegraph and telephones.....	1,442.85	167.34	1,610.19
Hotels and boarding camps.....	200,680.46	95,799.44	296,479.90
Laundries.....	2,041.24	1,794.32	3,835.56
• Corrals.....	868.14	561.35	1,429.49
Miscellaneous.....	48,266.38	3,779.86	52,046.24
Total receipts.....	77,825,710.34	25,670,843.11	103,496,553.45
DISBURSEMENTS.			
Expenditures:			
Salaries and wages.....	8,724,353.48	2,344,039.24	11,068,392.72
Miscellaneous items, including traveling and contingent expenses.....	620,865.90	85,811.47	706,677.37
Material, equipment, and supplies, including cost of purchasing, handling, and transporting, issued.....	8,003,414.62	1,348,795.53	9,352,210.15
Balance of material on hand, including cost of delivery.....	2,613,613.26	1,171,840.90	3,785,454.16
Purchase of steamers Panama and Colon.....	1,306,177.73	6,694.94	1,312,872.67
Panama Railroad stock purchased.....	157,118.24		157,118.24
Purchase of rights of New Panama Canal Co.....	\$40,000,000.00		
Less value of French material used and charged to material accounts.....	418,928.68		
Purchase of territorial rights in Canal Zone.....	39,581,071.32	—14,226.21	39,566,845.11
Loans to Panama Railroad Co.....	10,000,000.00		10,000,000.00
Advances to Panama Railroad Co. account current-in-debtedness ^a	450,000.00	130,000.00	580,000.00
Individuals and companies ^b	712,576.62	70,266.61	782,843.23
	530,537.36	181,155.54	711,692.90
72,699,728.53	5,324,378.02	78,024,106.55	
Balance—excess of receipts over disbursements.....	5,125,981.81	20,346,465.09	25,472,446.90

^a This amount is disposed of when vouchers are audited and distributed to expenditures accounts.

^b This account represents expenditures for individuals and companies for which collection will be made and the proceeds deposited with the Treasurer of the United States as miscellaneous receipts.

Statement of receipts and disbursements to September 30, 1906—Continued.

Loans to Panama Railroad Co.	450,000.00	890,000.00	1,234,856.27
Individuals and companies Receipts deposited in United States Treasury Material and supplies - balance on hand, including cost of purchasing, handling, and transporting Advances to Panama Railroad Co. on account of current indebtedness a.	530,537.36 384,869.62 2,613,613.26 712,576.62	711,692.90 682,621.09 3,785,454.16 782,843.23	\$1,008,152.99 25,032.99 3,619.91 68,544.03 128,486.35
CURRENT ASSETS.			79,041,197.88
Balance of available cash Outstanding accounts receivable - hospital revenues uncollected Postage stamps on hand Due from Postmasters	5,568,176.22 332,720.28 3,164.66 7,388.67	25,565,831.44 445,863.09 801.00 4,434.80 8,051.75	\$1,054,920.47 7,452.78 3,206.11 47,588.73 102,319.45
CURRENT LIABILITIES.			104,731,409.72
Audited accounts payable - Postal money-order funds - Unearned postage - stamp revenues - Cana zone municipal deposits - Sundry accounts			1,215,487.54 1,234,856.27
26,024,682.08			
79,041,197.88			104,731,409.72

^a This amount is disposed of when vouchers are audited and distributed to expenditure accounts.

EXHIBIT F

ESTATE PLANNING COMMISSION

Strewn about the floor were the remains of a chair, a table, and a lamp.

Assets.	Amount.	Liabilities.	Amount.
Net current assets June 30, 1906, per Exhibit D	\$ 5,946,594.83	Net current liabilities as per Exhibit D	\$1,215,487.54
Less collections to be deposited in United States Treasury as miscellaneous receipts	332,720.28	Unvouchered accounts:	
		Material and equipment purchased, delivered, and in course of delivery (estimated)	4,797,595.21
		Miscellaneous accounts (estimated)	127,102.36
		Due Panama Railroad Co. (estimated)	306,629.14
Balance estimated net liabilities June 30, 1906	\$ 5,613,879.55 1,032,934.70	Balance of February 1, 1906, appropriation favor of Panama Railroad Company not drawn	200,000.00
	6,646,814.25		6,646,814.25

EXHIBIT F.

ISTHMIAN CANAL COMMISSION.

Consolidated exhibit of disbursements September 30, 1906.

Title of account.	To Apr. 3, 1905.	Apr. 3, 1905, to June 30, 1906.	Total to June 30, 1906.	July 1 to Sept. 30, 1906.	Total to Sept. 30, 1906.
GENERAL ADMINISTRATION.					
Regular and special commissioners.....	\$126,704.71	\$195,266.71	\$321,971.42	\$9,942.02	\$331,913.44
Office of administration.....	54,574.69	182,570.03	237,144.72	35,221.79	272,366.51
Division of audit and accounts.....	14,552.30	168,013.82	182,566.12	50,633.90	233,200.02
Division of disbursements.....	21,026.70	96,631.15	117,657.85	30,280.07	147,937.92
Repairs of buildings.....		2,726.71	2,726.71	1,710.92	4,437.63
Total.	216,858.40	645,208.42	862,066.82	127,788.70	989,855.52
GOVERNMENT AND SANITATION.					
Administration.....	20,440.19	127,425.67	147,865.86	21,530.37	169,396.23
Administration of justice.....	10,208.54	52,280.61	62,489.15	10,743.23	73,232.38
Division of municipalities, revenues, education, and posts.....	21,801.87	114,511.31	136,313.18	49,433.24	185,746.42
The Zone treasurer.....	377.50	357.50	735.00	135.00	870.00
Sanitation.....	169,806.77	1,025,637.50	1,195,444.27	215,082.60	1,410,526.87
Hospitals and asylums.....	187,399.55	994,502.23	1,181,901.78	248,926.98	1,430,828.76
Police and prisons.....	55,031.04	190,075.08	245,106.12	46,273.56	291,379.68
Fire protection.....		10,919.17	10,919.17	15,531.38	26,450.65
Repairs and renewals of buildings.....		24,611.55	24,611.55	18,742.01	43,353.56
Military protection.....		146.63	146.63	450.95	597.58
Maintenance and operation waterworks and sewers, Panama.....		4,184.82	4,184.82	4,436.47	8,621.29
Maintenance and operation waterworks and sewers, Colon.....		757.94	757.94	1,977.71	2,735.65
Total.	465,065.46	2,545,410.01	3,010,475.47	633,263.50	3,643,738.97
CONSTRUCTION AND ENGINEERING.					
Administration.....	158,464.24	164,680.69	323,144.93	26,522.80	349,667.73
<i>Canal construction.</i>					
Engineering.....	98,646.86	297,224.96	395,871.82	75,628.12	471,499.94
Surveys.....	42,847.97	200,614.04	333,462.01	31,183.00	364,645.01
Excavation.....	278,084.29	1,554,371.11	1,832,455.40	455,779.12	2,318,234.52
Transportation.....	140,817.87	1,233,937.60	1,374,755.47	284,057.62	1,668,813.09
Tools and implements.....		64,075.19	64,075.19	1,800.03	65,875.22
Track grading, laying, and surfacing.....	81,186.05	381,886.46	463,072.51	84,984.33	548,056.84
Telegraph and telephone.....	900.11	40,464.65	41,364.76	27,048.32	68,413.08
Structures.....		49,472.44	49,472.44	18,688.69	68,159.13
Docks and wharves.....	38,472.02	101,426.37	139,898.39	54,659.89	194,558.28
Quarters, repairs of.....		4,959.66	4,959.66	10,258.34	15,218.00
Waterworks and sewers.....		15,449.57	15,449.57	11,356.72	26,806.29
Gatun dam.....				3,830.03	3,830.03
Gatun locks.....				4,479.46	4,479.46
Lands and buildings purchased.....				6,460.00	6,460.00
Panama Railroad, relocation of.....				3,409.19	3,409.19
Total.	680,955.17	4,033,882.05	4,714,837.22	1,113,620.88	5,828,458.06
<i>Public works.</i>					
Construction waterworks and sewers, Panama.....	109,692.25	511,254.71	620,946.96	28,860.41	649,807.37
Construction waterworks and sewers, Colon.....	15,726.93	219,080.22	234,807.15	56,233.07	291,040.22
Street improvements, Panama.....	71.88	289,956.32	290,028.20	79,058.10	369,086.30
Street improvements, Colon.....		6,865.75	6,865.75	39,198.71	46,064.46
Improvement of zone highways.....	11,058.09	178,388.60	189,446.69	64,424.39	253,871.08
Total.	136,549.15	1,205,545.60	1,342,094.75	287,774.68	1,609,869.43

Consolidated exhibit of disbursements September 30, 1906—Continued.

Title of account.	To Apr. 3, 1905.	Apr. 3, 1905, to June 30, 1906.	Total to June 30, 1906.	July 1 to Sept. 30, 1906.	Total to Sept. 30, 1906.
CONSTRUCTION AND ENGINEERING—continued.					
<i>Plant.</i>					
Rolling stock.....	\$5,736.22	\$1,366,226.71	\$1,371,962.93	\$3,694,093.19	\$2,066,056.12
Excavating machinery.....	107,207.84	934,015.49	1,041,223.33	59,843.35	1,101,066.68
Floating equipment.....	5,849.41	1,534,883.99	1,540,733.40	58,279.10	1,599,012.50
Shop and other machinery and tools.....	57,984.70	351,645.68	409,630.38	29,366.09	438,996.47
Rails, fastenings, and ties.....	10,249.95	249,939.16	260,189.11	7,119.48	267,308.59
Panama Railroad, second main track.....		63,679.86	63,679.86	47,717.78	111,397.64
Buildings.....	271,240.41	2,777,761.19	3,049,001.60	601,735.37	3,650,736.97
Construction zone waterworks and sewers.....	23,791.22	585,097.75	608,888.97	115,893.38	724,782.35
Electric-light plants.....				2,322.90	2,322.90
Lands purchased.....	41,790.00	15,092.96	56,882.96		56,882.96
Total.....	523,849.75	7,878,342.79	8,402,192.54	1,616,370.64	10,018,563.18
Total construction and engineering.....	1,499,818.31	13,282,451.13	14,782,269.44	3,024,288.98	17,806,558.42
RECAPITULATION.					
General administration.....	216,858.40	645,208.42	862,066.82	127,788.70	989,855.52
Government and sanitation.....	465,065.46	2,545,410.01	3,010,475.47	633,263.50	3,643,738.97
Construction and engineering.....	1,499,818.31	13,282,451.13	14,782,269.44	3,024,288.98	17,806,558.42
Total expenditures.....	2,181,742.17	16,473,069.56	18,654,811.73	3,785,341.18	22,440,152.91
OTHER DISBURSEMENTS.					
Purchase of Panama Railroad stock.....	155,657.49	1,460.75	157,118.24		157,118.24
Rights acquired from New Panama Canal Co. (less French material used).....	40,000,000.00	—418,928.68	39,581,071.32	—14,226.21	39,566,845.11
Rights acquired from the Republic of Panama.....	10,000,000.00		10,000,000.00		10,000,000.00
Individuals and companies a.....	149.32	530,388.04	530,537.36	181,155.54	711,692.90
Balance of material on hand, including cost of purchase, handling, and transportation.....	440,240.71	2,173,372.55	2,613,613.26	1,171,840.90	3,785,454.16
Loans to Panama Railroad Co.....		450,000.00	450,000.00	130,000.00	580,000.00
Advances to Panama Railroad Co. on account current indebtedness b.....		712,576.62	712,576.62	70,266.61	782,843.23
Total.....	50,596,047.52	3,448,860.28	54,044,916.80	1,539,036.84	55,583,953.64
Total disbursements.....	52,777,789.69	19,921,938.84	72,699,728.53	5,324,378.02	78,024,106.55

^aThis account represents expenditures account, individuals and companies, for which collections will be made and deposited with United States Treasurer as miscellaneous receipts.

^bThis amount is disposed of when vouchers are audited and distributed to expenditures accounts.

EXHIBIT G.

ISTHMIAN CANAL COMMISSION.

Detailed exhibit of disbursements for the fiscal year ended June 30, 1906, and for three months to September 30, 1906.

Classified accounts.	Fiscal year 1906.	July 1, 1906, to Sept. 30, 1906.	Total.
GENERAL.			
Isthmian Canal Commission.....	\$36,733.38	\$6,797.69	\$43,531.07
Committee on Engineering.....	117,767.88	2,669.79	120,437.67
Special Commissioners.....	7,040.48		7,040.48
Total.....	161,541.74	9,467.48	171,008.22
DEPARTMENT OF ADMINISTRATION.			
Office of administration.....	121,035.15	28,097.91	149,133.06
Office of the general auditor, Washington.....	39,095.46	7,875.09	46,970.55
Office of the general auditor, Isthmus.....	108,218.96	38,801.00	147,019.96
Office of the disbursing officer, Washington.....	10,857.45	5,461.51	16,318.96
Office of the disbursing officer, Isthmus.....	68,685.84	21,883.57	90,569.41
Transportation of funds, premium, and discount.....	15,616.25		15,616.25
Rent, care, and maintenance of general office, Washington.....	23,765.18	5,831.91	29,597.09
Total.....	387,274.29	107,950.99	495,225.28
DEPARTMENT OF GOVERNMENT AND SANITATION.			
<i>Government.</i>			
The executive office.....	105,337.63	18,924.79	124,262.42
The administration of justice.....	41,337.86	9,150.13	50,487.99
The Zone treasurer.....	70.00	135.00	205.00
Office of collector of revenues and director of posts.....	41,306.74	12,208.87	53,515.61
Postal service and transportation of mails.....	39,378.47	18,471.10	57,849.57
Division of education.....	10,123.88	10,465.58	20,589.46
Policing the Zone.....	150,944.38	39,653.66	190,598.04
Penal institutions.....	5,547.38	2,499.11	8,046.49
Bureau of municipalities.....	2,111.48	3,252.97	5,364.45
Fire protection.....	10,897.01	15,343.12	26,240.13
Military protection.....	146.63	441.65	588.28
Maintenance and operation of waterworks and sewers:			
Panama.....	3,649.31	3,790.42	7,439.73
Colon.....	633.92	1,671.60	2,305.52
Total.....	411,484.69	136,008.00	547,492.69
<i>Sanitation, hospitals, and asylums.</i>			
Office of chief sanitary officer.....	60,184.79	13,295.09	73,479.88
Office of director of hospitals.....	14,587.45	3,004.66	17,592.11
Ancon hospital.....	328,738.97	81,145.19	409,884.16
Colon hospital.....	207,741.07	56,249.59	263,990.66
Other hospitals and dispensaries.....	176,249.83	65,846.58	242,096.41
Office of chief quarantine officer.....	8,102.97	1,662.93	9,765.90
Quarantine service:			
Panama.....	18,347.58	2,779.30	21,126.88
Colon.....	22,681.71	3,982.43	26,664.14
City sanitation:			
Panama.....	255,093.57	43,027.97	298,121.54
Colon.....	121,399.19	27,384.62	148,783.81
Zone sanitation.....	364,896.30	105,334.97	470,231.27
Care of Zone cemeteries.....	6,737.68	2,422.90	9,160.58
Santo Tomas Hospital.....	4,369.82	1,540.00	5,909.82
Laboratory.....	9,509.74	2,066.79	11,576.53
Total.....	1,598,640.67	409,743.02	2,008,383.69
Total government and sanitation.....	2,010,125.36	545,751.02	2,555,876.38
DEPARTMENT OF CONSTRUCTION AND ENGINEERING.			
Office of chief engineer.....	118,637.62	22,305.10	140,942.72
Office of assistant chief engineer.....		4,274.49	4,274.49
Division of labor and quarters.....	151,594.66	33,176.98	184,771.64
Division of meteorology and river hydraulics.....	40,886.11	6,446.52	47,332.63
Total.....	311,118.39	66,203.09	377,321.48

Detailed exhibit of disbursements for the fiscal year ended June 30, 1906, and for three months to September 30, 1906—Continued.

Classified accounts.	Fiscal year 1906.	July 1, 1906, to Sept. 30, 1906.	Total.
DEPARTMENT OF CONSTRUCTION AND ENGINEERING—cont'd.			
<i>Building construction.</i>			
Office of master builder.....	\$183,153.82	\$45,066.01	\$228,219.83
Construction of general offices.....	104,115.95	13,774.38	117,890.33
Construction of quarters, gold employees.....	875,719.51	184,916.96	1,060,636.47
Construction of quarters, silver employees.....	200,443.37	45,403.49	245,846.86
Construction of hospitals.....	286,724.77	72,295.09	359,019.86
Construction of schoolhouses.....	7,992.92	13.86	8,006.78
Construction of shops.....	196,522.77	35,122.58	231,645.35
Construction of hotels.....	350,661.84	92,886.28	443,548.12
Construction of storehouses.....	34,999.32	11,235.10	46,204.42
Construction of division buildings.....	54,276.56	5,417.35	59,693.91
Construction of police stations, jails, and prisons.....	72,566.31	41,602.64	114,168.95
Construction of club houses.....		301.70	301.70
Repairs of general offices.....	7,696.13	2,537.80	10,233.93
Repairs of quarters:			
Gold employees.....	10,772.84	15,267.47	26,040.31
Silver employees.....	1,332.67	7,685.82	9,018.49
Repairs of hospitals.....	9,897.06	5,308.98	15,206.04
Repairs of schoolhouses.....	1,752.39	—120.81	1,631.58
Repairs of shops.....	55,516.09	—10,492.95	45,023.14
Repairs of hotels.....	3,649.60	3,752.48	7,402.08
Repairs of division buildings.....	20,643.51	732.91	21,376.42
Repairs of police stations, jails, and prisons.....	1,172.68	4,171.34	5,344.02
Total.....	2,479,580.11	576,878.48	3,056,458.59
<i>Mechanical division.</i>			
Office of superintendent of motive power and machinery.....	75,917.69	22,607.68	98,525.37
Shop superintendence.....	87,264.79	32,269.84	119,534.63
Repairs of locomotives.....	140,008.78	33,492.22	173,501.00
Repairs of freight cars.....	36,672.00	27,629.65	64,301.65
Repairs of work cars.....	6,857.67	2,203.61	9,061.28
Repairs of steam shovels.....	23,220.40	23,060.69	46,281.09
Repairs of dredges.....	31,807.00	8,421.47	40,228.47
Repairs of other excavating equipment.....	15,211.24	10,676.94	25,888.18
Repairs of other floating equipment.....	55,586.35	—2,037.07	53,549.28
Repairs of shop machinery and tools.....	132,116.03	25,452.25	157,568.28
Operation and maintenance of air compressors.....	4,657.02	322.39	4,979.41
Shop expense.....	162,426.96	38,636.80	201,063.76
Total.....	771,745.93	222,736.47	994,482.40
<i>Municipal improvement.</i>			
Office of municipal engineer.....	40,461.30	12,942.48	53,403.78
Construction of waterworks and sewers:			
Panama.....	372,727.12	22,668.06	395,395.18
Colon.....	170,372.40	48,245.03	218,617.43
Construction of Zone waterworks and sewers.....	485,746.68	100,933.79	586,680.47
Maintenance and operation of Zone waterworks and sewers.....	14,848.89	8,193.15	23,042.04
Street improvement:			
Panama.....	269,252.47	73,961.17	343,213.64
Colon.....	5,817.07	32,998.92	38,815.99
Construction of roads.....	131,835.03	52,597.57	184,433.20
Total.....	1,491,061.56	352,540.17	1,843,601.73
<i>Canal construction.</i>			
Engineering and superintendence.....	135,130.09	63,281.39	198,411.48
Surveys.....	272,033.52	28,783.98	300,817.50
Excavation.....	683,356.07	310,576.36	993,932.43
Dredging.....	195,355.59	44,142.84	239,498.43
Transportation.....	508,003.36	143,173.55	651,776.91
Tools and implements.....	64,075.19	1,767.63	65,842.82
Grading of track.....	72,390.49	20,024.84	92,415.33
Track laying and surfacing.....	213,699.63	57,518.38	271,218.01
Structures.....	27,093.38	17,006.25	44,099.63
Operation of marine equipment other than dredges.....	10,570.77	4,847.85	15,418.62
Construction of docks and wharves.....	89,116.27	54,633.93	143,770.20
Telegraph and telephones.....	37,928.05	27,004.14	64,932.19
Lands and buildings purchased.....		6,460.00	6,460.00
Clearing Gatun section.....		3,598.69	3,598.69
Clearing site, Gatun dam.....		44.50	44.50
Gatun dam, locks.....		3,710.77	3,710.77
Excavation, Gatun locks.....		533.84	533.84
Engineering, relocation Panama Railroad.....		3,056.24	3,056.24
Total.....	2,309,352.41	790,185.18	3,009,537.59
Total department of construction and engineering.....	7,362,858.40	2,008,543.39	9,371,401.79

Detailed exhibit of disbursements for the fiscal year ended June 30, 1906, and for three months to September 30, 1906—Continued.

Classified accounts.	Fiscal year 1906.	July 1, 1906, to Sept. 30, 1906.	Total.
MISCELLANEOUS.			
Local transportation.....	\$214,084.99	\$45,706.90	\$259,791.89
Transportation of employees to Isthmus and over Panama			
Railroad.....	110,819.29	73,466.67	184,285.96
Rolling stock.....	1,350,404.46	689,573.57	2,039,978.03
Excavating machinery.....	619,934.99	57,381.77	677,316.76
Floating equipment.....	1,520,819.52	54,965.37	1,575,784.89
Shop and other machinery and tools.....	312,997.16	27,940.64	340,937.80
Rails and fastenings.....	152,482.82	4,939.58	157,432.40
Ties.....	97,444.88	1,830.31	99,275.19
Furnishing and maintaining quarters:			
Gold.....	144,190.78	42,699.93	186,890.71
Silver.....	63,220.69	38,094.90	101,315.59
Moving and care of French material and equipment.....	8,682.27	2,306.87	10,989.14
Panama Railroad, second main track.....	61,383.93	46,456.39	107,840.32
Hotels and boarding camps, operation of—balance.....	44,220.75	14,589.25	58,810.00
Construction and furnishing Santo Tomas Hospital.....	39,960.89	11,545.25	51,506.14
Lands purchased.....	10,502.96	.....	10,592.96
Electric light plant, Culebra.....		2,130.90	2,130.90
Total.....	4,751,250.38	1,113,628.30	5,864,878.68
RECAPITULATION.			
General.....	161,541.74	9,467.48	171,009.22
Department of administration.....	387,274.29	107,950.99	495,225.28
Department of government and sanitation.....	2,010,125.36	545,751.02	2,555,876.38
Department of construction and engineering.....	7,362,858.40	2,008,543.39	9,371,401.79
Miscellaneous.....	4,751,250.38	1,113,628.30	5,864,878.68
Total.....	14,673,050.17	3,785,341.18	18,458,391.35
MATERIAL AND EQUIPMENT.			
Material, supplies, and equipment purchased.....	\$7,716,791.90	\$2,196,409.21	\$9,913,201.11
COST OF PURCHASE, HANDLING, AND TRANSPORTATION, MATERIAL AND SUPPLIES.			
Office of general purchasing officer, Washington.....	48,188.97	12,820.25	61,009.22
Office of assistant purchasing agent:			
New York.....	14,895.57	3,536.08	18,431.65
New Orleans.....	3,672.83	948.73	4,621.56
Tacoma.....	3,690.81	912.65	4,612.46
San Francisco.....	627.43	.....	627.43
Services and expenses of inspectors in the United States.....	41,392.87	13,707.84	55,100.71
Division of material and supplies on Isthmus.....	771,217.50	153,335.29	924,552.79
Freight, advertising, and miscellaneous items.....	439,233.57	27,867.61	467,101.18
Total.....	1,322,928.55	213,128.45	1,536,057.00
MANUFACTURING ACCOUNT.			
Operation of printing office.....	22,123.00	6,815.46	28,938.46
Machine shops.....	103,233.32	50,723.42	153,956.74
Building construction.....	18,510.98	11,687.47	30,198.45
Foundries.....	36,465.02	29,156.39	65,621.41
Miscellaneous.....	360.05	12,716.03	13,076.08
Total.....	180,692.37	111,098.77	291,791.14
Total material and equipment.....	9,220,412.82	2,520,636.43	11,741,049.25
Less amount charged to expenditures accounts.....	5,873,601.89	1,345,795.53	7,222,397.42
Balance.....	3,346,810.93	1,171,840.90	4,518,651.83

SUMMARY.

Expenditures, including material, equipment, and supplies issued.....	\$14,673,050.17	\$3,785,341.18	\$18,458,391.35
Balance of material and supplies purchased and manufactured, including cost of purchase, handling, and transportation of material and supplies.....	3,346,810.93	1,171,840.90	4,518,651.83
Total amount disbursed.....	18,019,861.10	4,957,182.08	22,977,043.18

EXHIBIT H.

ISTHMIAN CANAL COMMISSION.

Classified statement of new buildings constructed and initial repairs to buildings acquired from the New Panama Canal Company to put them in condition for occupancy to June 30, 1906.

Class.	Amount.
Construction of general offices.....	\$105, 992. 38
Construction of quarters:	
Gold employees.....	567, 793. 12
Silver employees.....	74, 823. 20
Construction of hospital buildings.....	241, 100. 44
Construction of shops.....	51, 099. 66
Construction of hotels.....	356, 946. 92
Construction of storehouses.....	13, 269. 37
Construction of division buildings.....	22, 098. 84
Construction of miscellaneous buildings, Government and Sanitary Department.....	128, 264. 90
Total new buildings.....	1, 561, 388. 83
Initial repairs to French buildings.....	1, 487, 612. 77
Total charges to account buildings, as per Exhibit F.....	3, 049, 001. 60

EXHIBIT I.

LETTER OF CHAIRMAN TO SECRETARY OF WAR SETTING FORTH REASONS WHY CONSTRUCTION OF CANAL BY CONTRACT SEEMS ADVISABLE.

WASHINGTON, D. C., *August 29, 1906.*

SIR: I beg to transmit a proposed invitation for bids to complete the construction of the Isthmian Canal upon a percentage basis, including as a part thereof, for greater convenience of consideration, the terms of a contract to be entered into thereunder.

As to the general advisability of contracting the work of completing the canal, we know from experience that the difficulties to be overcome in the successful prosecution of any great work are in direct proportion to the magnitude and complexity of the enterprise. Furthermore, experience and observation teach that the best results in any field of human activity are accomplished by those most skilled in that particular field of human endeavor.

The physical construction of the Panama Canal is, all things considered, the greatest task of modern times. It is in the highest degree exceptional in magnitude, complexity, and cost. In order therefore to most successfully, economically, and quickly finish this great work there should be associated with the Commission the best trained talents of the world in each particular department of the undertaking.

The question may be asked, Why does not the Commission gather together experts in each branch of the work, and with them as heads create its own organizations and do the work by day's labor? If the elements of time and cost did not enter so vitally into the undertaking, the Commission might do this; but because of the unprecedented and greatly extended industrial activity of the time, and the consequent violent competition for all classes of superintendents, foremen, subcontractors, skilled mechanics, and even ordinary laborers, it would take the Commission years to secure men and build up departmental construction organizations which would equal in efficiency those now controlled by the leading contractors of the United States.

If therefore the Commission, by associating with it the best trained construction men available, can receive the immediate benefit of existing organizations which these men control, and which they have spent years in perfecting, and can by reason of their assistance complete the canal in shorter time and for less money, is it not the part of wisdom and sound business judgment to do so?

If the wisdom of contracting the work of completing the canal be conceded, the question remains, What form of contract is best?

Whether—

- (1) To divide the work into sections, and let each part to a separate firm of contractors; or,
- (2) To let the entire work to one firm or company on the basis of unit prices; or,
- (3) To let the actual work of construction to an association of contractors, each member of which will be an expert in some branch of the work, on a percentage basis.

Before discussing the relative merits of these various forms of contract it may be well to describe the actual work to be done under the agreement.

It is clear that under any character of contract it would be incumbent upon the Government to reserve to itself on the Isthmus the great Departments of Government, Sanitation, and Engineering. With a complete staff organized for this purpose it is easy for it to assume other obligations scarcely less essential to the welfare of the work, and, indeed, almost a part of its governmental duties. The control of quarters, and of the subsistence department, so directly connected with the health and well-being of canal employees, must be retained directly; or if the subsistence department be turned over to the contractor it must still be subjected to a rigid supervision. In no event can the contractor be allowed to make of this department an independent source of profit. The retention of the entire Commissary Department, needed for the supply of the Commission's own men, becomes in this connection further advisable. The elaborate construction plant which the Government has installed, and its maintenance, render likewise expedient the retention of the Department of Materials and Supplies. The Panama Railroad, with its commercial business extending to all parts of the world, can not wisely be turned over to the contractor. With all these facilities thus retained by the Government it becomes possible for it, with little additional expense, to supply at a very much lower cost than any contractor could the raw materials for the canal, the careful selection of which, uninfluenced by consideration of profits, is admittedly a matter of first importance.

Upon general grounds of policy, and of an immediate and far-reaching economy as well, it therefore seems advisable to confine the work to be done by the contractor to actual construction. These considerations necessarily exclude the idea of contracting for a finished canal as a whole, where the material, as well as the labor and all other items entering into the cost, shall be furnished by the contractor.

As to the best form of contract applicable to the work of construction proper:

The chief objection to the first proposition, viz, that of dividing the work into sections and letting each part to a separate firm of contractors, is that there are so many perplexing elements and questions entering into this work, such as the control of labor in supply and price, repairs to and maintenance of plant and equipment, and the necessary conflicting relations of so many contractors to the Panama Railroad, as to make the task of preventing the most serious complications between these antagonistic interests under that plan a hopeless one.

There is also the further serious objection that even after the utmost precautions are taken, one or more of the contractors is certain to prove unsatisfactory, to the confusion and delay of part of the work; and an undue delay to any one part of the work means a delay to the whole.

The objection to the second alternative, viz, that of letting the work as a whole to one firm or company on a basis of unit prices, is that it would cost too much. Any contractor who successfully

carries out this great work will be entitled to a fair profit, but his estimate of cost and fair profit he must add, if bidding on unit prices and honestly intending to carry out his contract, a substantial increment to protect himself against unforeseen contingencies and possibly severe losses. The contract thus becomes to a great extent speculative; but while it certainly is not desired that an undertaking of so much consequence as this should be the contractor's ruin, with a consequent disorganization of the work, neither is it desired that it become a source of enormous and unreasonable profits at the Government's expense, as would be the case if the contingencies the contractor guarded against in his estimates did not occur.

This brings us to the consideration of the third proposition, viz, that of letting the actual work of construction to an association of contractors on a percentage basis.

As outlined in the accompanying papers, this plan contemplates a competition for the work between two or more groups of contractors, each group composed of contractors who have achieved a significant success in at least one of the departments of construction involved in the present undertaking, and whose combined experience covers the whole task. By the terms of the invitation, proposals by single individuals or firms whose experience and whose organizations must be relatively limited are therefore discouraged.

The contractor who receives the award will be paid an agreed percentage upon the estimated reasonable cost of the actual construction work as fixt by an engineering committee of whom the contractor will name two members and the Commission three. This committee will likewise, from all available data, estimate a reasonable time for the completion of the canal; and a system of premiums and penalties to be paid to the contractor accordingly as the work is completed within or beyond such estimated cost and time is provided for. The amount of percentage to be paid the contractor fixes the basis of competition.

This plan is not novel. It is being employed increasingly by the oldest, largest, and most successful corporations in the country. Its advantages are many:

(1) The Government will get the benefit of the combined efforts of the best and most experienced contractors in the world, each in charge of a department in which he is a specialist and cooperating with other specialists, because all are sharers in results, to bring the whole work to the earliest and most successful conclusion.

(2) The Government will secure the cooperation of these powerful interests in keeping full the ranks of foremen, locomotive engineers, steam-shovel men, and mechanics of all classes, and with the best men of each class.

(3) The Government will know exactly what the work costs in every part, and as it progresses, and will know it is only paying a fair and reasonable profit on same.

(4) The plan offers every incentive for speedy and economical construction by penalizing extra time and cost and rewarding better than contract performance as to either. The Government can well afford to pay bonuses on time, as the annual interest saved to it will after five years be double the amount of bonus paid per year.

(5) By retaining control of the work and exercising strict supervision thru its engineering force, the Government will protect itself against cheap or faulty construction.

(6) The financial responsibility of the association of contractors will be beyond question, and its bond for \$3,000,000 will amply protect the Government, in so far as a bond can be made a protection.

(7) The contract will be more flexible. It will not be necessary to settle in advance all the main details of the work, which could not subsequently be modified in material respects under any other form of contract save with the consent, perhaps unattainable, of the contractor and his sureties. Wide departures from the general plan may subsequently be made without affecting the real interest of either side. Points which at the outset might otherwise be difficult, if not impossible, to adjust, may be disposed of as they arise.

(8) Friction will be avoided. Claims and counterclaims, inevitably attendant upon changes in the plans and specifications with an accompanying train of contentions, will to a great extent be eliminated.

(9) Probable saving to the Government. No great undertaking covering a long period of time has ever been accomplished without the discovery, during its development, of new methods and machinery which have shortened the time and cheapened the cost of the undertaking. American inventive genius is not dead; history will repeat itself; and the time and cost of completing the canal as estimated will in all probability be reduced by the application of new principles which will be discovered as the work progresses. It is conceivable that the Government may receive as the fruits of the system of rewards embraced in this plan savings sufficient to offset the entire percentage required to be paid the contractor on the estimated cost of the work.

(10) Finally, a termination of the contract, should it become necessary, would be less disastrous to the contractor, while an effective resumption of the work would be made easier to the Government owing to its close relations thereto.

In view of the foregoing considerations, I strongly recommend that the inclosed invitation for bids to complete the construction of the canal on a percentage basis be issued.

Yours, very truly,
T. P. SHONTS,
Chairman Isthmian Canal Commission.
The SECRETARY OF WAR.

EXHIBIT J.

INVITATION FOR PROPOSALS TO COMPLETE THE CONSTRUCTION OF THE SHIP CANAL UPON THE Isthmus OF PANAMA BETWEEN THE CARIBBEAN SEA AND THE PACIFIC OCEAN.

ISTHMIAN CANAL COMMISSION,
OFFICE OF ADMINISTRATION,
Washington, D. C., October 9, 1906.

The Isthmian Canal Commission, under authority of an act of the Congress of the United States, approved June 28, 1902, the Executive orders issued by the President of the United States and the laws enacted by the Isthmian Canal Commission thereunder, and subject to all limitations imposed by the said acts and orders and by law, invites sealed proposals for the completion of the construction upon the Isthmus of Panama of an eighty-five-foot lock-level ship canal, having a minimum depth of forty-one feet and a minimum width at the bottom of two hundred feet, between deep water in the Caribbean Sea and deep water in the Pacific Ocean, subject to the provisions stated in the draft of proposed contract annexed hereto.

I.

BASIS OF PROPOSAL.

1. Proposals must be expressed in terms of a percentage upon the estimated cost of the construction, fixed as hereinafter provided, for which the contractor will agree to do the work.
2. Proposals must be inclosed in sealed envelopes marked "Proposals for completing the construction of the Isthmian Canal," and must be filed at the office of the Isthmian Canal Commission, Washington, D. C., not later than 12 m., January 12, 1907, at which time and place all proposals will be opened in the presence of the proposers.

II.

QUALIFICATIONS OF BIDDERS.

1. Any association of American contractors, in whatever form organized, legally competent to contract, and having an available capital over all debts and liabilities, except those reasonably assumed to furnish the bonds hereafter required to be given, of five million (\$5,000,000) dollars, is qualified to submit proposals.
2. Each proposal must be accompanied by a certified check on or certificate of deposit in a bank or trust company of the United States acceptable to the Isthmian Canal Commission, and made payable to

the order of the Chairman thereof, or by bond, in good security, in form attached, for the amount of two hundred thousand (\$200,000) dollars. Such checks or certificates may be held, deposited, or collected by the Commission in its discretion. The same, or their proceeds, will be returned to unsuccessful bidders upon the rejection of their bids, and to the successful bidder upon the formal execution of a contract with the Commission in the form hereto annexed, secured by bond with approved security in the sum of two million (\$2,000,000) dollars, for the faithful performance thereof. Should the successful bidder fail to enter into such contract within fifteen days after the acceptance of his bid, such check, certificate of deposit, or the proceeds thereof, shall be forfeited, or the bond substituted therefor shall become forthwith payable, as liquidated damages for said failure.

III.

BONDS.

1. The bidder shall submit with his proposal the names of the surety or sureties whom he proposes to give upon the bond to secure the performance of his contract, accompanied by a statement from them that, should the award be made to the said bidder, they will execute the bond for the performance of the contract in the form hereto annexed. Among the conditions contained in said bond shall be a provision that the surety shall not be discharged by reason of any failure of the Commission to give the contractor or the surety any notice provided for under the proposed contract; a provision that the surety shall not be released by reason of any change in the terms of the said contract, but that any such change shall only be a ground for reducing the liability of the surety under the contract to the extent to which the surety can show that the damages for which it is answerable have been enhanced thereby; and a provision that, in any suit on the bond, any award or assessment of damages by the Chief Engineer shall have the same effect against the surety as against the contractor.

2. If for any cause or at any time the surety or sureties given by the contractor should be deemed insufficient by the Commission, sureties satisfactory to the Commission shall be substituted within thirty days after notice to that effect by the Chairman of the Commission.

IV.

GENERAL DIRECTIONS TO BIDDERS.

The Commission, in selecting the bidder to whom it will award the contract hereunder, will exercise its discretion for the purpose of securing a contractor who shall be capable, in its judgment, to properly and efficiently fulfill the conditions and requirements of the proposed contract. To aid the Commission in the selection of such contractor, each bidder must fully state what organization, facilities, and experience he commands for undertaking the work, and with what organizations and credit or means of credit he will carry out such contract. The names and addresses of all persons interested with the bidder in his proposal shall be submitted with his proposal. If partnerships are interested, the names and addresses of the firm

members shall be given. If corporations are interested, a certificate showing the place of organization of the corporation, the amount of capital stock paid in, the excess of its assets over all liabilities, and the names and addresses of its officers and directors shall be furnished. The proposal shall also state that it is made without connection with any other bidder, that it is in all respects fair and free from collusion, and that no Member of Congress, official, or employee of the Government of the United States, of the Canal Zone, or of the Isthmian Canal Commission is interested therein; and it must also be sworn to in the form annexed before a notary public or other officer authorized to administer oaths.

V.

INFORMATION FURNISHED BY COMMISSION.

Plans and specifications, in so far as they have been adopted, will be supplied prospective bidders upon demand, but must be regarded as a general guide only, and not as conclusively binding upon the Commission. The Commission will also afford the freest opportunities, both in the United States and on the Isthmus, for the investigation of the Commission's working force and the terms under which each member thereof is employed, for the inspection of all contracts entered into or obligations assumed by the Commission, and for the examination of the state of the work and the conditions upon which it may be expected to be carried on.

VI.

REJECTION OF BIDS.

The Commission reserves the right to reject any bid. In case none of the bids is satisfactory the Commission will reject all and either throw open the proposals to foreign competition or proceed with the work without contract.

T. P. SHONTS, *Chairman.*

PROPOSAL.

THE Isthmian CANAL COMMISSION,
Washington, D. C.

SIRS: ----- hereby propose to complete the construction of a ship canal upon the Isthmus of Panama, between the Caribbean Sea and the Pacific Ocean, subject to all the conditions and requirements contained in the circular invitation of the Isthmian Canal Commission, as reissued December 15, 1906, and the terms and conditions contained in the form of contract thereto annexed, which are made a part of this proposal, for ----- per centum upon the estimated cost of the construction to be fixed as in said contract provided; and ----- agree that if this proposal should be accepted, ----- will, within fifteen (15) days thereafter, enter into a contract for the completion of the said canal secured by bond as in the forms annexed.

The following representations are made in compliance with the requirements of your invitation for proposals, and are warranted to be correct:

(1) Names and addresses of all persons interested in this proposal.

[If partnerships are interested, give the names and addresses of the firm members; if corporations are interested, give the names and addresses of the officers and directors.]

(2) Financial standing, credits, and means of credit of individuals, partnerships, and corporations interested in this proposal.

[If a corporation is interested, a copy of the articles of association should be attached, together with a certificate showing the amount of capital stock paid in, and the excess of assets over all liabilities. If a partnership is interested, a certificate should be attached showing the capital of the partnership, and the excess of its assets over all liabilities. Similar detailed information should also be furnished as to individuals interested in the bid.]

(3) The facilities for prosecuting work commanded by individuals, firms, or partnerships interested in this proposal, and their past experience in carrying out substantial construction contracts.

This proposal is made without connection with any other bidder; is in all respects fair and free from collusion; and no Member of Congress, official, or employee of the Government of the United States, of the Canal Zone, or of the Isthmian Canal Commission is interested herein.

This day, before me, a notary public for _____, appeared _____, to me personally known, and known by me to be the individual whose signature is annexed to the foregoing proposal, and said that the statements therein contained are true. Witness my hand and seal this _____ day of _____, 1907.

_____, N. P.

(When surety company is surety.)

BOND ON PROPOSALS.

Know all men by these presents, that we, _____, as principal, and _____, a corporation existing under the laws of _____, (Name of surety company.) the State of _____, as surety, are held and firmly bound unto the United States of America, in the sum of two hundred thousand dollars (\$200,000), for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

CONDITIONS.

The conditions of the above obligation are such that any award made by the Isthmian Canal Commission to the above-bounding principal, under a public invitation for completing the construction of a ship canal upon the Isthmus of Panama, shall be accepted by said principal forthwith, and the said principal shall enter into a contract for the completion of the construction of said canal, and give bond with good and sufficient sureties, to be approved by the Commission, for the faithful performance thereof in the forms annexed to said invitation. And the undersigned bind themselves, their heirs, execu-

tors, administrators, and successors, in case the said principal shall fail to enter into such contract and furnish such bond within fifteen (15) days after such award, to pay the said Isthmian Canal Commission for and on behalf of the United States of America two hundred thousand (\$200,000) dollars as liquidated damages for such failure.

In witness whereof, the principal hereto has caused the same to be executed by its proper officer thereto duly authorized under a _____ of its^a _____ dated the _____ day of _____, 190____, and the surety hereto has caused the same to be executed by its proper officer thereto duly authorized under a _____ of its^a _____ dated the _____ day of _____, 190____.

Executed in triplicate this _____ day of _____, 190____.

Attest:

----- [SEAL] By -----^b

----- as its -----
(Principal.)

----- [SEAL] By -----

----- as its -----
(Surety.)

FORM OF CONTRACT.

An agreement for the construction of a lock-level ship canal upon the Isthmus of Panama between deep water in the Caribbean Sea and deep water in the Pacific Ocean, entered into this _____ day of _____, 1907, between the United States of America by and through the Isthmian Canal Commission, hereinafter called the Commission, and _____, the accepted bidder, under a public invitation for proposals to complete the construction of the said canal, hereinafter called the contractor.

^a Board of directors or other governing body of the principal. A copy of the by-law or of the record of proceedings of the governing body of the corporation, showing the authority of the officer or officers executing the bond for the principal, *must* accompany or be attached to the bond—the same to be certified by the custodian of such records, under the corporate seal, to be a true copy. If the authority was given by resolution, enough of the records will be copied along with the resolution to show that it was adopted, and the entire matter copied (not simply the resolution) will be certified to be a true copy. If the authority is a by-law, the wording of the executing clause will be altered accordingly.

^b President or other officer authorized to sign for the principal. A copy of the record of the selection of the officer or officers executing the bond for the principal, certified by the custodian of such records, under the corporate seal, to be a true copy, *must* accompany or be attached to the bond, unless the resolution authorizing its execution gives the names of the officer or officers, in which case no other evidence of their official character is required.

ARTICLE I.

WORK TO BE DONE BY THE CONTRACTOR.

The work to be done by the contractor shall be construction work proper, and shall comprise the following items and all work of actual construction necessarily connected therewith:

1. Dredging, clearing, and excavating canal from the locks at either end of the canal to deep water.
2. Construction of the proposed dam at Gatun, and of the dam or dams at or near the southern or Pacific end of the canal.
3. Construction of all locks and regulating works at either end of the canal and wherever located.
4. Dredging, clearing, and excavating canal from the dams at either end to the Culebra Cut.
5. Excavation and completion of the Culebra Cut and revetments and the approaches thereto.
6. Removal and reconstruction of the Panama Railroad upon lines of relocation to be fixed by Chief Engineer of the Commission.
7. Removal and transportation of all spoil of whatsoever character, whether by land or water, to such points or places, and the disposition thereof in such manner, as may be designated by the said Chief Engineer.
8. The quarrying, transportation, and dressing of all stone required for masonry work, the manufacture and transportation on the Isthmus of concrete, the transportation and preparation on the Isthmus of timber, or other materials, except finished metallic parts, used in the proper execution of the above work and constituting a part of the completed structure and the appliances adjunct thereto and necessary to the proper maintenance and operation thereof.
9. All work herein required to be done shall be performed according to the plans and specifications furnished by the Chief Engineer of the Commission; but said plans and specifications will be subject at any time to such alterations and changes as may be deemed advisable by the Chief Engineer or the Commission.

ARTICLE II.

EXTRA WORK.

Should the Commission, prior to the completion of the canal, decide to construct breakwaters at either end of the canal, additional reservoirs or dams, or additional auxiliary works of any character, the contractor shall have the right to and, if required, shall construct the same upon the terms upon which he agrees hereunder to perform the work upon the canal proper; but a supplemental estimate of the cost and time for the completion of the said additional works shall be made by an Engineering Committee, such as is hereinafter provided for, in the same manner as the estimate is provided to be made by the original Engineering Committee, of the cost and time required for the construction of the canal proper.

ARTICLE III.

PLANT AND FACILITIES FURNISHED BY THE COMMISSION.

The Commission agrees to furnish, free of cost to the contractor, plant, facilities, and means as follows:

1. All locomotives, cars, steam shovels, drills, cranes, dredges, tugs, scows, dumps, rails, ties, and track materials, electric-light or power plants, and other machinery of a substantial character required to efficiently carry on the construction work, and necessary work animals and equipment; but not hand tools or machinery of a minor character usually carried in stock, save through its Department of Materials and Supplies, as hereinafter provided.
2. All raw materials put into the work, the machinery and appliances necessary for the operation and protection of the locks or other parts of the canal, but not the treatment, shaping, finishing, transportation upon the Isthmus, or incorporation into the work of such materials, nor the erection, or assembling of such machinery upon the Isthmus; cement; explosives; oil, coal, fuel; and, at the election of the Commission, electricity for the proper operation of any rolling or floating stock or other machinery used by the contractor in the performance of his work upon the Isthmus: *Provided, however,* That the Commission may, in its discretion, transfer to the contractor the manufacture of cement or explosives, if it should be found that either can be properly made upon the Isthmus, and the manufacture upon the Isthmus of metallic parts of the locks and auxiliary works of the canal, the cost of such manufacture to be added in such case to the total estimated cost of the canal as hereinafter provided to be arrived at.
3. Construction tracks already built in a condition not less efficient than now existing; but additional construction tracks, including the relocation of those turned over to the contractor, must be built by the contractor.
4. Quarters for the proper housing of all necessary employees of the contractor; but the Commission shall be allowed reasonable time for the construction of quarters additional to those now existing.
5. Warehouses for the storage of the contractor's tools and supplies.
6. Hospitals and hospital service for sick employees of the contractor.
7. Office buildings for the accommodation of the contractor's clerical and administrative force actually employed upon the Isthmus in connection with the construction of the canal.
8. Transportation of the contractor's employees, employees' families, and supplies over the Panama Railroad, and employees and employees' families over the Panama Railroad Steamship Lines at rates not greater than one-half the regular published tariff rates. The contractor shall also be at liberty in all cases, where the transportation facilities afforded by the Panama Railroad Steamship Line are not sufficient for the needs of the contractor's business, to employ such other lines of transportation as he sees fit, until such time as the Panama Railroad Steamship Line is in condition to resume or furnish sufficient service to the contractor.

9. Free telegraph and telephone service upon the Isthmus necessary to the actual efficient discharge of the contractor's business.

10. Free trackage rights over the Panama Railroad Company's tracks for the work trains of the contractor, from canal cuttings to dump grounds, or docks when necessary, and return; and as a part of this obligation, the Commission will assume the cost of constructing such additional trackage, yards, or other facilities of the Panama Railroad as may be essential to the proper execution by the contractor of the work herein provided for, the amount and character of such work being always subject to the direction and approval of the Chief Engineer of the Commission.

11. Water for offices, engines, shovels, drills, dredges, and other purposes for which it is reasonably required for the prosecution of the work.

12. Commissary stores which will be open to the contractor and his employees upon the same terms as to the Commission's own employees. The Commission will also supply from its other departments, so far as it may have the same available, tools and supplies which it is not the duty of the Commission to furnish free hereunder upon the terms of cost plus the usual handling charges.

13. Mess-house privileges for contractor's employees equal to those at any time extended to the employees of the Commission. The contractor shall also have the privilege of taking over and operating upon his own account such mess houses, either directly or by contract with a third party, subject in all cases to the direction and approval of the Chief Engineer with respect to prices, privileges, and general methods, and subject to the duty to furnish to the Commission's employees accommodations in all respects equal to those furnished to the contractor's own employees. Mess or lodging houses furnished by the Commission to the contractor, or any subcontractor, shall be subject to daily inspection by the Chief Engineer or his agents, and all directions and modifications which the Chief Engineer may deem necessary for the proper housing and feeding of such employees shall at once be carried into effect by the contractor. Any profit or loss arising from the operation by the contractor of mess houses shall be debited against or credited to the contractor.

14. The equipment which the Commission under this article agrees to supply it will also maintain; and it will to that end operate and properly furnish and supply such machine and other shops as may be necessary, but this obligation shall not extend to the making of repairs which are ordinarily known as outside, yard, or running repairs, which must be made by the contractor.

15. The Commission, to the extent to which its machine shops may be adequate, will manufacture or repair for the contractor such minor machinery and tools as can be economically and conveniently manufactured or repaired at the said shops, charging the contractor therefor actual cost, plus fifteen per cent.

16. The judgment of the Chief Engineer of the Commission shall in all cases be controlling as to the extent and character of the facilities to be supplied by the Commission under this article.

ARTICLE IV.

FUNCTIONS RESERVED TO THE COMMISSION.

The Commission will retain control of—

1. All engineering work in connection with the construction of the canal, including surveys and the general direction and control of the construction work to be done by the contractor with the right to fully inspect same.
2. Municipal engineering, including the construction of water-works, sewers, roads, and streets wherever located.
3. The Governmental and Police Department.
4. The Sanitary and Hospital Department.
5. The Commissary Department.
6. Mess houses, except in so far as the same may be taken over by the contractor as hereinbefore provided for, and the inspection of the same in that event.
7. Quarters.
8. The construction and maintenance of buildings.
9. The operation of the Panama Railroad.
10. An Auditing Department, which shall have control over the books and accounts of the contractor, with authority to direct the manner in which all accounts relating to expenditure upon the canal construction by the contractor shall be kept and to which department the books and accounts of the contractor shall at all times be open.
11. A Department of Materials and Supplies.
12. And generally, all powers, rights, and privileges not herein specifically ceded to the contractor.

ARTICLE V.

TO BE SUPPLIED BY THE CONTRACTOR.

1. The contractor shall furnish and employ all labor, foremen, superintendents, clerks, general office staff, and furnish all tools and machinery of a minor character necessary to efficiently operate the plant and carry out the work to be undertaken hereunder.
2. He shall make all repairs commonly known as outside repairs upon equipment and machinery employed by him.

ARTICLE VI.

OBLIGATIONS TO BE ASSUMED BY CONTRACTOR.

1. The contractor shall begin the actual work of construction within sixty days from the signing of this contract.
2. He shall take over into his own employment all employees on the Isthmus upon the pay rolls of the Commission at the time that he begins work, except such employees as the Commission may reserve to its own use. Employees on what is known as the "gold list" taken over by the contractor under this article shall not be discharged, nor shall their salaries be reduced; except for cause, and then only when their discharge or salary reduction is approved by the Chief Engineer of the Commission.

3. He shall assume and carry out all contracts that may have been entered into by the Commission for the supply and employment of foreign or other labor, and shall execute in connection therewith such agreements or papers as may be required by the Commission.

4. He shall scrupulously abide by all the rules and regulations that may be put into force from time to time by the Sanitary Department of the Commission, and shall issue all orders required of him by the Commission for the proper observance and enforcement of said rules and regulations.

5. He shall, on written notice from the Chairman or Chief Engineer of the Commission, discharge for cause any employee who may be in his service.

6. He shall comply with all laws of Congress or of the Government of the Canal Zone, with respect to the hours of labor, character of employees, and other matters in so far as the same may be applicable in the work undertaken by him; and all provisions of law bearing upon the performance by the contractor of this contract shall be regarded as incorporated into and made a part hereof whether expressed or not.

7. He shall perform all work embraced in this contract in the most thorough and workmanlike manner, and subject to the approval of the Chief Engineer of the Commission, with the highest regard for the safety of life and property, and in accordance with the plans, specifications, and drawings furnished by the Chief Engineer of the Commission, and subject to his orders and directions.

8. No material shall be put into the work by the contractor of which the Chief Engineer may disapprove; but failure by the Chief Engineer to disapprove of unsound materials or the improper preparation or use of material shall not exempt the contractor from liability to the Commission for damage or extra expenditure occasioned thereby, unless the contractor in doubtful cases shall have requested of the Chief Engineer in writing a definite approval of any particular materials or any specified preparation or use thereof, and the Chief Engineer, after a reasonable time, has failed to act upon the request. The cost of replacing or repairing damages due to the use of defective materials or any specified preparation or use thereof after the contractor has discharged his full duties under this section shall be reimbursed the contractor as a part of the current payments to him, and shall be added to the estimated cost of completing the canal as fixed by the Engineering Committee hereinafter provided for.

9. He shall carry on the construction work, if required, during the night as well as during the day, and in such shifts as the Chief Engineer shall direct.

10. He shall, subject to such indemnity as is provided for in Article VII, assume and be responsible for all just legal claims for injuries or wrongs inflicted upon persons and property by his own act or that of any of his employees, except property and land damages necessarily occasioned by the orderly construction of the canal and auxiliary works.

11. He shall not assign or transfer this contract or any interest therein without the written consent of the Commission.

12. He shall not enter into subcontracts for the performance of the work to be undertaken hereunder without the written consent of the Commission; and as a condition precedent to seeking the consent of

the Commission shall furnish the Commission with a written statement as to the nature of the proposed subcontract and the leading provisions thereof, and with detailed information concerning the proposed subcontractor or subcontractors, their financial standing and resources, their facilities for prosecuting the work of canal construction, and such other information as may be required of him with respect to them or any of them.

13. In all cases where subcontracts are entered into with the approval of the Commission, and bonds are taken by the contractor to secure the performance of such subcontracts, such bonds shall be taken subject to assignment to the Commission, and shall be so assigned, as additional security for the performance by the contractor and subcontractor of this contract.

14. He shall maintain upon the Isthmus an agent upon whom all notices required or proper to be served hereunder upon either himself, his sureties, or any subcontractor, may be served, and who shall, in addition, be authorized to accept service of legal process on behalf of himself, his sureties, or any subcontractor at the suit of the Commission or any private person.

15. He shall be responsible to the Commission for all injuries or damages inflicted upon the plant with which he may be intrusted by the Commission, and upon the Canal or any of its auxiliary works by the negligence of himself or any of his employees or subcontractors, or the employees of such subcontractors; but shall not be responsible for any depreciation in the value of the plant or material intrusted to him or any of his subcontractors or employees by the Commission, attributable to ordinary wear and tear. Damages inflicted under this clause shall be estimated by the Chief Engineer, subject only to revision by the Chairman of the Commission, and the same shall be deducted from the percentage earned by the contractor under this contract, if any, or if no percentage shall have been earned, the said damages shall be paid by the contractor or his surety.

ARTICLE VII.

PAYMENTS.

1. Payments will be made to the contractor by the Commission on or about the fifteenth day of each month in current coin of the United States or its equivalent, either in Panama, Washington, or New York City, as the contractor may elect, covering the cost of the actual construction work done by the contractor or his subcontractors upon the Canal during the preceding calendar month, including therein cost of labor and of procuring labor, superintendence and clerical service on the Isthmus, transportation of employees whose pay is chargeable against the Commission hereunder to and from the Isthmus, overtime paid to employees, wages paid to employees when sick, if allowed by the Chief Engineer, current purchases of tools and repairs made by the contractor, and the actual cost to the contractor of any materials put into the work; and excluding the cost of organization, administration, legal and general expenses of the contractor, interest, taxes, cable service, commissary purchases and the cost of running the mess houses, should the contractor take over the same, and all expenses to which he shall have been put by

reason of his own negligence or inefficiency, or by reason of the supply of any unsound or imperfect materials or any imperfect preparation or use of material contrary to the provisions of this agreement, and all expenses not directly connected with the construction work which he may have incurred on his own account: *Provided, however,* That two-thirds of the actual cost, including legal expenses, to the contractor or subcontractors of meeting valid legal claims of employees or others for damages for injury or death due to the actual work of canal construction, or of compromising, when approved by the Commission, any claims for such damages shall be included in the monthly payments above provided for. Where subcontractors are employed by the contractor upon a percentage basis, only such payments will be made to the contractor on account of such subcontractors as would be made in the event the contractor had done the work directly.

2. Payments will be made upon certificates signed by some designated official of the contractor upon the Isthmus, and the Chief Engineer of the Commission, accompanied by vouchers showing in detail such expenditures as are authorized under this article.

ARTICLE VIII.

FINAL COMPENSATION.

Upon the completion of the construction work upon the canal proper, and the final acceptance by the Chief Engineer or the Commission of the work done by the contractor, there will be paid to the contractor _____ per centum upon the total estimated cost of construction as fixed by the Engineering Committee under Article IX hereof, subject to the following conditions:

1. If the total actual cost of the construction upon the basis prescribed in Article VII shall exceed the total estimated cost of construction as fixed by the Engineering Committee as hereinafter provided, there shall be deducted one-half per centum from the per centum otherwise payable to the contractor for each five million (\$5,000,000) dollars, or half fractional part thereof, by which the actual cost shall exceed the estimated cost. If the actual cost shall fall below the estimated cost the contractor shall receive in addition to the stipulated percentage upon the estimate of the Engineering Committee one-third of the difference between such actual cost and the estimated cost. In no event shall the contractor receive a percentage upon any part of the actual cost exceeding the estimated cost, unless the estimated cost be increased, as herein provided.

2. If the construction work upon the canal proper herein provided for shall not be completed by the contractor within the time fixed by the Engineering Committee, the contractor shall forfeit as liquidated damages for each month that the work of construction shall exceed the estimated time for the construction one hundred thousand (\$100,000) dollars; if it shall be completed by him in less time, he shall be paid a premium of one hundred thousand (\$100,000) dollars, in addition to all other compensation earned hereunder, for each month less than the estimated time in which he shall have completed it: *Provided, however,* That the damages assessed under this section shall not in any event exceed the percentage otherwise payable to

the contractor and the amount of the contractor's bond to secure performance.

3. If, however, at the end of any year of the contractor's work, or at the option of the Chief Engineer at the end of any shorter period, the cost of construction has not exceeded nor the rate fallen below the proportionate estimated cost or rate of construction, the Commission will pay to the contractor two-thirds of the agreed percentage upon the actual cost to such date; but if at any subsequent time the cost should exceed or the rate fall below the proper proportionate cost or rate, no further portion of the agreed percentage shall be paid until the arrears of cost and rate are made up.

4. No allowance shall be made the contractor for any interruption or suspension of the work hereunder, unless the same shall be due to an act of God or a public enemy, or an order of the Commission, or failure or unreasonable delay of the Commission to maintain or furnish such plant or materials as it agrees hereunder to maintain or furnish, or failure to fairly perform any material act which hereunder it agrees to perform. Where the suspension or interruption of work is due to any of the last-mentioned causes, the time of suspension or interruption shall be added to the estimated time for the construction of the canal.

5. If any suspension of the work should be due to a default or order of the Commission, and such suspension should exceed one year, the contract may be treated as terminated by the contractor, who shall thereupon become entitled to receive such percentage as he may have earned upon the work actually done. At such time also an estimate shall be made by the Chief Engineer to ascertain whether the work to such time has proportionately exceeded or fallen behind the estimated cost and time; and proportionate profits and premiums or deductions shall be credited to or charged against the contractor accordingly.

6. All questions with reference to the percentage or profits earned by or payable to the contractor hereunder, the deductions therefrom, or premiums thereon, or the increase of the estimated period of construction, attributable to the above-named causes, shall be determined by the Chief Engineer of the Commission, subject only to appeal to the Chairman of the Commission.

ARTICLE IX.

METHOD OF ESTIMATING COST AND TIME OF CONSTRUCTION OF CANAL.

1. Within ten days from the execution of this contract, the contractor shall nominate two engineers of approved standing, who, together with three engineers to be nominated by the Commission within the same period of time, shall constitute an Engineering Committee. One of the three engineers nominated by the Commission shall be the Chief Engineer of the Commission, who shall be the chairman of the Engineering Committee. The said Engineering Committee thereupon, upon a consideration of all available data, and, if in their judgment it be deemed expedient, upon personal investigation of the work to be performed upon the Isthmus and of the conditions surrounding the same, shall estimate the total reasonable cost of completing the construction of the canal as herein outlined and as may be

more particularly defined in the plans and specifications for the construction of the canal submitted to said committee by the Commission. In arriving at the said estimated reasonable cost, the committee shall carefully take into account all the services to be performed and the means, facilities, and materials to be supplied by the Commission in the construction of the said canal, as hereinabove provided for, and shall exclude from the estimated cost the value of same and all interest charges of whatsoever character, cost of right of way and land damages, and all expenses incurred by the Commission in discharging the portion of the work reserved to it, and the organization, administration, legal, general, and other expenses of the contractor for which he is not entitled to be reimbursed under the terms of Article VII, and shall make no allowance for losses or damages, legal or otherwise, attributable to the acts of himself or employees and subject to be sustained by him, nor any allowance for contingencies.

2. The Engineering Committee shall likewise, from similar data and investigations, estimate the reasonable time for the construction of the canal with the facilities afforded to the contractor under the terms of this contract. In fixing the said time, they shall assume that the contractor will at all times employ, on a basis of eight hours a day for American labor and ten hours a day for foreign labor, a force of laborers and employees upon the actual work of construction or the superintendence thereof equal to the number that can be efficiently employed, having due regard to the progressive condition of the work, and that he will be supplied by the Commission with the plant hereinbefore described necessary to fully employ his working forces.

3. The committee shall also submit alternative estimates of time and cost, based upon night work and two shifts a day of ten hours each for foreign and eight hours for American labor, and also upon continuous work with three shifts a day of eight hours each, and shall formulate a rule by which these estimates may be increased or diminished, according to the time that the work may be carried on upon one or the other of these several bases.

4. If, at any future time, the plans and specifications for the construction of the canal, as submitted to the said Engineering Committee, shall be materially altered in any respect, or if it shall be made to appear to the President of the United States that the estimates of the committee are based upon physical data so erroneous as to materially affect the estimated cost and time of construction, or that the estimates have become substantially inequitable by reason of the intervention of an act of God or a public enemy, or for any other material cause which shall not have been taken into account by the Engineering Committee in making their estimate, and for which the contractor is not responsible, or that the annual average scale of wage, after the exercise of due economy upon the part of the contractor, substantially exceeds or falls below that taken as a standard by the Engineering Committee in making their estimates, and the estimates can not be amended by the application of any rule formulated by the committee under the requirements of this contract, the said committee, or a new committee formed in the same manner as the original committee, shall, upon written notice of either the Commission or contractor, provided the same be given within sixty (60) days, or in the proper case upon notice from the President,

promptly convene, and modify the estimate as to the cost or time, or both, by adding to or taking therefrom the cost or time fairly attributable to the changes made in said plans and specifications, to the use of such erroneous data, to such act of God or a public enemy, to such other cause, or to such change in the average scale of wage.

5. The construction of breakwaters, either to protect the Atlantic or the Pacific end of the canal, shall not be included in the estimate of the said committee of the cost and time of the construction of the said canal. Should the Commission subsequently decide upon the construction of breakwaters or upon the construction of any additional reservoirs or dams or other works not provided for in the plans and specifications at the time of their submission to the Engineering Committee, supplemental estimates shall be made by the committee, or a similar committee to be appointed in its place, of the cost and time required for the construction of such breakwaters, reservoirs, dams, or other works upon the same basis as the estimates are made for the time and cost of the completion of the canal proper.

6. The estimates of the time and cost of the main canal construction work herein contemplated shall be completed if possible, but with due regard to the importance of the subject, within ninety (90) days, and in any event within six (6) months from the signing of this contract, and shall fix the cost and time as of the date when completed. From the estimated cost, the cost of any construction work upon the canal done by the Commission after such date shall be deducted, and to the estimated cost the cost of any work done by the contractor before such date shall be added.

ARTICLE X.

DEFAULT BY THE CONTRACTOR.

1. Should the contractor at any time fail to observe any of the material obligations of this contract, or should he fail at any time to proceed with reasonable diligence in the construction of the canal, so that after excluding delays due to acts of God or public enemies, or an order or default of the Commission, or to any other cause which under the terms of this agreement shall entitle the contractor to an extension of the estimated time for completion, the canal, in the judgment of the Chief Engineer, can not be completed within twenty per centum more than the estimated time; or should the contractor fail to keep employed at work upon the canal a force of workingmen sufficient in the judgment of the Chief Engineer to complete the canal within twenty per centum more than the estimated time, or should the contractor within three months after notice from the Chief Engineer fail to increase the working force to any extent prescribed by the Chief Engineer within the number that can be efficiently employed upon the said work, having due regard to its progressive condition; or should the work done by the contractor, in the judgment of the Chief Engineer, be done in an unworkmanlike manner, or in violation of the directions of the Chief Engineer; or should any materials put into the dams, locks, auxiliary works or other parts of the canal by the contractor contrary to the provisions of this agreement be unsound or defective, and such as in the judgment of the Chief Engineer are

calculated to impair the structural strength and efficiency of the canal; or should the contractor's current actual cost of construction at any time, in the judgment of the Chief Engineer, exceed by more than twenty per centum that part of the total estimated cost of construction properly proportionable thereto; or should the contractor become insolvent or pass into the hands of a receiver; or should the contractor fail to satisfy or secure any judgment that may be rendered against him within thirty days after the same shall go to execution, or become incapacitated for the proper discharge of his duty under this contract, by reason of legal or other complications, the Commission, through the Chairman, may, by ten days' written notice served upon the contractor, declare the contractor to be in default.

2. In any case in which the contractor is declared to be in default, as aforesaid, the Commission may (1) either allow the contractor to resume work upon the canal, subject to such conditions, forfeitures and penalties as it may impose, or (2) take possession of and assume control and direction of the work of the construction of the canal, and may complete it either directly through its own agents or employees, or (3) may recontract any unfinished work privately or by public advertisement upon the basis herein outlined, or on any other basis, to any contractor or contractors that it may select; and in any event may charge against the contractor and his sureties the additional cost of doing the work which the contractor agrees under his contract to do, and may collect the same from the contractor or his sureties, as damages, and should the construction of the canal be delayed beyond the estimated time by the default of the contractor, may collect, in addition, from the contractor or his sureties for each month in excess of the estimated time the liquidated damages provided for under this contract.

3. And in any and all of the foregoing events the Commission shall have the right to withhold, pending the final adjustment, any balance otherwise due the contractor and proceed in the courts of the United States against the contractor or his sureties forthwith, or at any later period that it may deem advisable, to collect any damages that it may be entitled to either in law or in equity, whether damages specified herein or damages additional thereto allowed by law: *Provided always, That the aggregate damages for which the contractor may be held liable under this contract shall not exceed the percentage and premiums otherwise payable to the contractor and three million (\$3,000,000) dollars in addition thereto.*

4. The contractor and his sureties covenant that in all cases where the Commission so elect the damages sustained by reason of the default of the contractor may be assessed by the Chief Engineer, subject to review by the Chairman of the Commission; and the final award of damages as determined by the Chief Engineer or Chairman shall be paid to or recovered by the Commission from the contractor or his sureties, under the terms of the contractor's bond, or the Commission or the United States may sue to recover the actual damages sustained, treating the said award as *prima facie* evidence of the damages sustained and throwing upon the contractor and his sureties the burden of showing that the said award was the result of fraud or collusion upon the part of the Chief Engineer or Chairman or that it was arrived at contrary to the provisions of this contract.

ARTICLE XI.

TERMINATION OF CONTRACT WHEN CONTRACTOR IS NOT IN DEFAULT.

1. Irrespective of any default upon the part of the contractor, the Commission reserves the right to terminate this contract at any time in its discretion upon the terms of paying to the contractor the entire cost of the work performed by him to such time, ascertained in the manner hereinbefore provided, the percentage earned by him upon such cost and two hundred and fifty thousand (\$250,000) dollars additional: *Provided*, That the total amount payable to the contractor, including debits against him authorized under the contract, shall not in any event be less than five hundred thousand (\$500,000) dollars: *And provided further*, That, should the contractor have done at such time, in the judgment of the Chief Engineer, less than one-third of the work contracted to be done, he shall be paid one (1) per centum additional. At such time also an estimate shall be made by the Chief Engineer to ascertain whether the work to such time has proportionately exceeded or fallen behind the estimated cost and time, and proportionate profits and premiums or deductions shall be credited to or charged against the contractor accordingly.

ARTICLE XII.

DECISION OF THE CHIEF ENGINEER.

The decision of the Chief Engineer, in the absence of fraud, misconduct, or a palpable error apparent on the face of any decision or award, and to the extent that it shall not be modified by the Chairman of the Commission, shall be conclusive and binding upon the contractor: (1) Upon all questions submitted under the foregoing provisions of this contract to his determination. (2) Upon the question whether there has been a substantial breach of contract upon the part of the contractor. (3) Upon the question whether the contractor is in default. (4) Upon the character and extent of the damages sustained by the Commission or the United States from any breach of contract or default upon the part of the contractor.

ARTICLE XIII.

DEFINITIONS.

1. "Commission" means the present Isthmian Canal Commission, or any successor thereof, or any individual, officer, or department of the United States to whom or to which the duty of constructing or arranging for the construction of the Isthmian Canal may hereafter be intrusted by law or executive order; and "Chairman of the Commission" means any successor exercising the Chairman's present functions. All action reserved to the Commission hereunder may be executed and carried out by its Chairman. Any rights secured to the Commission hereunder shall also be deemed rights secured to the United States of America, and, if that course be deemed advisable, may be enforced in the name of the United States.

2. "Chief Engineer" means the Chief Engineer of the Isthmian Canal Commission, or any successor thereof, or any deputy or sub-

stitute that may be designated by the said Commission, or its successor. In all cases where action is provided to be taken by the Chief Engineer, similar action taken by the Commission or its successor shall be equally effective.

3. "Engineering Committee" means either the original Engineering Committee, or any similar committee that may be appointed in its place; it not being contemplated that the Engineering Committee will be maintained as a permanent organization.

4. "Contractor" means contractors, or the employees of any contractor, or any subcontractor or employees when doing the work of the principal contractor, or the successors or assigns of the contractor.

5. "He," "his," or "him" means in the proper case "it," or "its," "they," "their," or "them."

6. "Surety" means "sureties," and whatever is required of any one surety shall be required of all.

In witness whereof, the Isthmian Canal Commission and _____ have caused this contract to be executed in triplicate the year and date first above mentioned.

Attest:

(When both principal and surety are corporations.)

BOND FOR FULFILLMENT OF CONTRACT.

Know all men by these presents, that _____ a corporation existing under the laws of the State of _____ as principal and _____ a corporation existing under the laws of the State of _____ as surety, are held and firmly bound unto the United States of America in the penal sum of _____ dollars (\$_____), for which payment, well and truly to be made, we bind ourselves, and our successors, jointly and severally, firmly by these presents.

Given under our hands and seals this _____ day of _____ nineteen hundred _____.

CONDITIONS.

The conditions of the above obligation are such that if the said above-bounded _____ or its successors shall well and truly, and in a satisfactory manner fulfill the contract hereto annexed, for the completion of the construction of a ship canal upon the Isthmus of Panama, and shall promptly make payments to all persons supplying him with materials and labor in the prosecution of the work contemplated by the contract, this obligation shall be void, otherwise shall remain in full force and virtue.

It is further agreed that the surety hereon shall not be discharged by reason of any failure of the Commission to give the contractor or the surety any notice provided for under the said contract, and that the surety shall not be released by reason of any change in the terms

of said contract, but that any such change shall only be a ground for reducing the liability of the surety under the contract to the extent to which the surety can show that the damages for which it is answerable have been enhanced thereby; and that in any suit hereon any decision or assessment of damages by the Chief Engineer, to the extent that it may not be modified as provided in said contract, shall have the same effect against the surety as against the contractor.

In witness whereof, the principal hereto has caused the same to be executed by its proper officer thereto duly authorized under a ----- of its ----- dated the ---- day of -----, 190---- and the surety hereto has caused the same to be executed by its proper officer thereto duly authorized under a ----- of its ----- dated the ---- day of -----, 190----.

Executed in triplicate this ----- day of -----, 190----.

Attest:

----- [SEAL.]

By -----

as its -----

(Principal.)

----- [SEAL.]

By -----

as its -----

(Surety.)

EXHIBIT K.

EXECUTIVE ORDER.

The Executive order of April 1, 1905, is hereby changed as follows:

The Commission will hold quarterly sessions the first week in February, May, August, and November of each year on the Isthmus of Panama, and will continue each session as long as public business may require. Further notice of such meetings shall not be necessary to their regularity. The Commission may hold special sessions at the call of the chairman. Four members shall constitute a quorum and the action of such majority shall be the action of the Commission.

The Commission, under the supervision of the Secretary of War, and subject to the approval of the President, is charged with the general duty of the adoption of plans for the construction and maintenance of the canal, and with the execution of the work of the same; for the purchase and delivery of supplies, machinery, and necessary plant; the employment of the necessary officers, employees, and laborers, and with the fixing of their salaries and wages; with the operation of the Panama Railroad Company and steamship lines as common carriers; with the utilization of the Panama Railroad as means of constructing the canal; with the government and sanitation of the Canal Zone, and with all matters of sanitation in the cities of Panama and Colon and the harbors thereof; with the making of all contracts for the construction of the canal or any of its useful accessories; and with all other matters incident and necessary to the building of a waterway across the Isthmus of Panama, as provided by the act of Congress, June 28, 1902.

The Executive Committee, as provided for in my Executive order of April 1, 1905, is hereby abolished.

In order to promote the greatest harmony between the heads of Departments, and to secure results by the most direct methods, the following organization shall be created:

The organization shall consist of the Chairman and the following heads of Departments: Chief Engineer, General Counsel, Chief Sanitary Officer, General Purchasing Officer, General Auditor, Disbursing Officer, and Manager of Labor and Quarters. The duties of each shall be as follows:

1. The Chairman shall have charge of all Departments incident and necessary to the construction of the canal or any of its accessories.
2. He shall appoint the heads of the various Departments, subject to the approval of the Commission.
3. The head of each Department shall report to and receive instructions from the Chairman.
4. He shall have charge of the operations of the Panama Railroad and steamship lines.

5. He shall perform such other duties as may be assigned to him from time to time by the Secretary of War.

A minute of every transaction of the Chairman shall be made and one copy of the minutes shall be forwarded to the Secretary of War and another copy transmitted for the consideration of the Commission at its next meeting.

The Chief Engineer shall have charge of:

1. All engineering work relating to the canal and its accessories.

2. All construction work on the Isthmus of Panama.

3. The operation of the Panama Railroad so far as same relates to canal construction work.

4. The custody of all the supplies and plant of the Commission upon the Isthmus.

5. In the absence of the Chairman from the Isthmus, the Chief Engineer shall act for him in all matters requiring prompt attention, such action to be reported to the Chairman for his action, but the action of the Chief Engineer shall be in full force and effect until disapproved by the Chairman.

The General Counsel shall have charge of:

1. All legal matters pertaining to the Commission, whether in the United States or on the Isthmus of Panama.

2. The administration of civil government within the Canal Zone, and shall exercise, through a local administrator, the authority heretofore vested in the governor of the Canal Zone.

The Chief Sanitary Officer shall have charge of:

1. All matters of sanitation within the Canal Zone, and also in the cities of Panama and Colon, and the harbors, etc., so far as authorized by the treaty, Executive orders and decrees of December 3, 1904, between the United States and Panama, relating thereto.

2. The custody of all medical supplies needed for sanitary purposes.

The General Purchasing Officer shall have charge of the purchase and delivery of all supplies, machinery, and necessary plant.

The General Auditor shall have charge of the general bookkeeping, of property accounts, of statistics, of administrative audit of the Commission, and of the accounting, bookkeeping, and audit of the government of the Canal Zone.

The Disbursing Officer shall have charge of timekeeping, of preparation of pay rolls and vouchers, and of payment of same.

The Manager of Labor and Quarters shall have charge of the employment of all necessary labor secured from the West India Islands or Central and South American countries; of the general personal records of all employees, of all quarters, and shall assign same to all employees of the Commission or of its contractors; and of the operation of all Commission hotels and mess houses.

APPOINTMENT OF OFFICERS.

All officers and employees shall be appointed, and their salaries shall be fixed, by the head of the Department in which they are engaged. Their appointment and salaries shall be subject to the approval either of the Commission, or, if the Commission is not in session, of the Chairman.

The employment of laborers, where the contract of employment is made in the United States, shall be negotiated and concluded by the

Chairman of the Commission. Where the employment of laborers is effected upon the Isthmus or outside of the United States, it shall be conducted under the supervision of the Chief Engineer, subject to the approval of the Chairman.

CONTRACTS.

Contracts for the purchase of supplies involving an estimated expenditure exceeding \$10,000 shall only be made after due public advertisement in newspapers of general circulation, and shall be awarded to the lowest responsible bidder, except in case of emergency, when, with the approval of the Secretary of War, advertising may be dispensed with. In the making of contracts for supplies or construction involving an estimated expenditure of more than \$1,000 and less than \$10,000 competitive bids should be secured by invitation or advertisement whenever practicable.

REPORTS.

The head of each Department shall make a report upon the work and operation of his Department to the Isthmian Canal Commission from time to time and as often as may be required by the Chairman of the Commission.

The Chairman of the Commission will make a report to the Secretary of War setting forth the results accomplished by each Department of the work at least annually and as often as he may deem advisable or the Secretary may require.

The Secretary of War will make to the President a report at least annually and as often as he may deem advisable or the President may require.

All Executive orders relating to the subject of the Panama Canal, excepting so far as they may be inconsistent with the present order, remain in force.

THEODORE ROOSEVELT.

Effective this date, November 17, 1906.

T. R.

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